NATURAL FAMILY PLANNING IN PICTURES

DR. J. A. MENEZES

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DR. (FR.) J. A. MENEZES *M.B;B.S. S.J.*

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DEDICATION

THIS BOOK
IS DEDICATED
TO
THE INDIAN WOMAN

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FOREWORD

In a decade experiencing a certain uneasiness and disillusionment with current artificial methods for the control of fertility, this book of Dr. Menezes is very appropriate. Dr. Menezes is no newcomer to writing in the field of Natural Family Planning-indeed it was the response to his previous publication "Natural Approach to Family Planning" which prompted him to write this present work. The interest shown in his first book highlighted the fact that the successful use of a natural method of family planning requires a correct understanding of how the body works and a certain methodology in how to use such knowledge to advantage. To achieve this, one requires to prepare teachers capable of giving such information. This companion volume is meant to fulfill this need.

In a sub-continent like India one must cater for all educative levels. Dr. Menezes in this book has succeeded in depicting the most complex hormonal physiological reactions occurring during the menstrual cycle in such a way that they can be understood by any woman, however uneducated she be. The book, however, also contains sufficient accurate up-to-date scientific information to satisfy the needs of nurses, midwives, doctors and medical students. This work will have a much wider circulation not only in India, but in all parts of the english-speaking world where natural family planning is being taught. I found the detailed illustrations very interesting and this part of the book is particularly relevant to illiterate people. I do recommend this book to all who are interested or working in the field of family planning and I congratulate Dr. Menezes on the excellence of the production.

Dr. Anna Flynn, M.D. M.R.C.O.G.

Director, 'Natural Family Planning Centre," Birmingham Maternity Hospital; Principal investigator for W.H.O. NFP-projects for England and Consultant on NFP to African (english-speaking) countries for the "International Federation for Family Life Promotion."

A WORD FROM THE EXECUTIVE DIRECTOR

The first edition of "Natural Family Planning in Pictures" has gone through two printings in English and one in Hindi. The fact that a new edition was found necessary speaks for the usefulness and popularity of the book. I am indeed happy to present the second edition to the public and particularly to the members of our Catholic Hospital Association of India. It contains a lot of new data both on the technical and on the psychological aspects of natural family planning (NFP).

At the "International Conference on Population Growth and Human Development" held in New Delhi in 1973, Mr. G.S. Pathak (the Vice President of India at that time) in his inaugural address said....."We must seek and find *human* solutions to population problems which are essentially the problems of ordinary men and women who have their own private histories and recognisable identity as members of a family....it is necessary to remember that we are not dealing with things but with *men and women*; we must never forget this crucial fact when population data are presented as impersonal statistics."

In this context, NFP stands in good light, because it respects the dignity of the human person and its use leaves the body unharmed. On the other hand, artificial methods interfere with the natural functions of the body, and more often than not, they cause harmful side effects, e.g. the Pill, the I.U.D. and sterilisation. When dealing with the human body, man must work *with* and not against it; and this is exactly how NFP works!

NFP-methods are *reliable* means to space births. In fact experienced teachers like Dr. J. Roetzer (Austria), the Kippleys (U.S.A.) and others, get results with the Sympto-thermal method that are equal to that of the Pill. Further, because NFP involves *both* the spouses in dialogue and decision-making, its use promotes love and maturity.

With all this in mind, our hospitals and dispensaries that dot the length and the breadth of our country can do yeoman service to our people by offering NFP as part of their preventive health-care programmes. I *am* aware that NFP is being offered by many of our institutions; but since the need for a method of birth regulation that is safe, reliable *and* moral, is both serious and widespread, it becomes necessary that *all* of them must make the effort to meet this need. Many a couple would not have succumbed to drastic measures like sterilisation or abortion if they had been taught NFP in time.

I am delighted and gratified to know that the first edition has been well received, both in India and abroad. I do hope and pray that there will be an even better response to this edition which has a lot more to offer.

Fr. John Vattamattom S.V.D.
Executive Director, C.H.A.I.

PREFACE TO THE SECOND EDITION

This illustrated book is a practical guide on how to use natural family planning (NFP) either to achieve or to avoid conception.

In the "Introduction," the beauty and the sublime purpose of sex and marriage are explained. It is one of the most important parts of the book that should be read and re-read. In "Part I," how the couple's "life-giving" power (viz. the human reproductive system) works, is presented. "Part II" deals with the "Mucus" and "Sympto-Thermal" methods of NFP.

This edition has been revised and enlarged: new diagrams have been added, the guide-lines for the use of the Sympto-Thermal method have been carefully updated, and in particular, its use during the period after child-birth has been presented in much greater detail. Since the understanding of periodic sexual abstinence is essential in the successful practice of NFP, this aspect has been given more coverage, with a special presentation on its many benefits to marriage. "The effects of light on the cervical mucus patterns" will be found both interesting and of practical help for those women who have problems with mucus etc. A lot of useful informa-mation (e.g. pregnancy rates) is given in the "Appendix"; the article "Useful information on health and hygiene" given there, should be read without fail, by every couple using NFP.

Too frequent childbirths (commonly seen in developing countries) create health hazards for our women. On the other hand, using NFP to effectively space births is good "preventive medicine;" hence it should be an essential part of any "Community Health Programme" whose main aim is preventive health-care. The best results are obtained when *both* husband and wife are instructed on "fertility appreciation" and marriage in a simple way, as is being done in many developing countries.

It is desirable that beginners learn NFP under the guidance of an experienced teacher of NFP. This book can also serve as a handy reference to those giving courses on sex education and marriage in schools and colleges.

Couples using NFP for sometime have come to appreciate it not merely as a "method" or "technique" of family planning that they "use," but something more meaningful, a "Way of life" that they adopt. The reasons for this are given in the book.

That modern methods of NFP (not the old "Rhythm method") are very reliable, has been scientifically established. But *I am* enthusiastic about NFP not due to this fact only, but more so because couples, in using NFP come to enjoy other far more precious benefits; namely, a deepening of marital love, maturity, intimacy and communication.

If by learning NFP from this book, couples reap these benefits, then I will consider myself amply rewarded.

Dr. (Fr.) J.A. Menezes S.J.

ACKNOWLEDGEMENTS

It is a pleasure to place on record my sincere thanks to all those who have helped me in bringing out this book.

At first, let me express my sincere appreciation to Fr. J. Vattamattom S.V.D. for his support and encouragement, and to Dr. Anna Flynn for writing the "Foreword."

My thanks go also to John Kippley (Founder of the "Couple to Couple League"), Rose Fuller, Fr. Richard Huneger and Jean Johnson (all well known pioneers and teachers in the field of natural family planning) for clarifying certain scientific questions; to Dr. Kathleen Dorairaj for permission to use material from her research work in this field; to Fr. Paul Marx O.S.B. (Director of "Human Life International") for his moral support and generous supply of literature on human sexuality, fertility and NFP; to Nona Aguilar (authoress of "The New No Pill, No Risk Birth Control") and Mary Shivanandan (authoress of "The Challenge to Love") for kind permission to quote from their books; to Dr. W. Urrichio for allowing me to quote from his talk on the benefits of abstinence in marriage, and to Mrs. Joy DeFelice for a summary of her valuable research on "The effect of light on the cervical mucus patterns."

My sincere thanks extends also to Dawson Gomes for doing the art-work of all the new figures, to David de Souza and Joseph Cordo for special technical assistance, and to all the married couples (whose photos appear in this edition) for testifying to their belief in, and satisfaction with NFP.

Much time and labour have gone into getting the cover picture and the photos of the NFP couples ready; for this I owe a debt of gratitude to Sydney D'Souza for this professional help given unstintingly.

Typing and re-typing material before it appears in its final form in a book is a labourious task; and so I offer many thanks to Joan Gomes, Wilma Rego, Astrid Pereira, Philomena and Marjorie D'Souza for their willing help in this work.

Finally, let me thank Fr. Clarence Srambical S.V.D. and Brother Herbert Raich S.V.D., the men behind the publishing and printing of this book.

May I assure all the above friends of my prayers for their willing co-operation in this labour of love.

Dr. (Fr.) J.A. Menezes S.J.

INTRODUCTION

SOME REFLECTIONS ON HUMAN SEXUALITY

If we look at any magnificent building or edifice, e.g. the world famous Taj Mahal at Agra, we are enthralled by its beauty; we enjoy its matchless form from a distance: the giant central dome, and the perfect symmetry of its columns. At close quarters we appreciate the intricate work that has gone into each wall and panel. But this "wonder of the world" that has been called "poetry in stone" would not be able to stand if it had not been for something that is absolutely necessary, but lies unseen viz. the foundation stone. Without this solid base, the beautiful superstructure of the Taj Mahal would not be ours to enjoy.

Similarly, we have the capacity to enjoy innumerable gifts that come from God, e.g. the beauties of nature, our health, talents, education, friendship, the love of one's spouse, the gift of children and above all the call of God to perfect happiness and communion with Him. Now these gifts would not be ours to enjoy were it not for the "foundation"–gift. This gift is so essential that it is the one that makes all other gifts (the "superstructure") possible to us. This "foundation"–gift is *life*!

Life exists in a large variety of forms in this world-from the tiniest cell upwards. Man possesses life in its *highest* form, whether in the realm of creative thought, emotions or action. Thanks to this type of life, only man among all creatures has been able to improve his lot and to make such phenomenal progress, that has taken him from the stage of living in a cave to that of being able to set foot on the moon!

Now, this life which is the gateway to the enjoyment of *all* other gifts, is itself a gift to man, e.g. suppose a man is 40 years old today; then 40 years and 9 months before, he simply did not exist. He did not have any right to life; He did not even have the chance to say : "Give me life." This most basic gift of all was given to him, freely through the human reproductive act performed by his parents. That is why the reproductive act takes on a very important significance.

The biologist calls the reproductive act by several names : "sex or sexual act;" "coitus," "copulation," "sexual intercourse," "mating" etc. Because humans have reproductive organs that are very similar in structure and function to many of the lower animals (mammals, like the dog, monkey etc.); very often the same terms for the sex act among animals are used indiscriminately, to describe the act among humans, e.g. copulation, coitus, even mating! However, there are profound differences between the sexual act performed by humans and by lower animals. Consequently, to use the same terms for humans as are used for animals is to connote merely the biological or physical aspect of the reproductive act. This is certainly an impoverishment of the term, and does gross injustice to the marital

relationship. For whatever similarity there is in the sexual act among humans and among lower animals ceases at the biological level. Man's sexuality and the human sexual act in particular, have elements which make it vastly superior to that of the lower animal. Hence, in order to have a correct and a healthy attitude towards human sexuality, it is essential to spell these elements out, at least in brief.

First and foremost, the human person is free to use or not to use the sexual faculty in order to bring life into the world. Husband and wife, even when there is a strong physical urge for genital union, have the power to abstain. For that matter man has the full freedom not to use his sexual faculty, by remaining single or adopting the celibate life. In one word, man is (or at least can be) *master* of his sex drive, because it is under the control of his reason. In other mammals, this is not so; they have a built-in, "in heat" mechanism that "turns on" at certain periods of the year or season only. When not in heat even if the male and female of any species are brought together, they will not copulate. In animals then, the sexual function is governed by "seasons;" in man it is governed by *reason*. The animal is a slave of its sexual urge; man is, or at least can be its master, because he is made free!

Only man can appreciate the "cause and effect" relationship between the sexual act and the child which is born 9 months later. Even the most illiterate couple somehow can deduce that their baby is the result of their sexual act. Does a dog realise that the act of copulation was the cause of the litter of pups that was born later? In other words, in animals there is a simple genital union *without* any appreciation of its profound consequences.

Only man can appreciate how close husband and wife come to God in the conception of a baby, because it takes three to achieve this: the sperm from the husband, the ovum from the wife and God who has to create the human spirit. It is true that God's help is essential for every human activity. But in no human act does God involve Himself so intimately, so sublimely, as in the human sexual act that is fruitful, since He creates and infuses the human spirit. Further, once the marital partners have completed the sex act and conception has occurred, the intricate and marvellous development of this new life from a single cell into a fully formed baby (9 months later) is entirely outside their scope and power; it is God who takes over completely so to speak. This profound, silent activity of God's power at work in the development of the unborn child is, we think, beautifully brought out in Psalm 139 : 13, 15–16 :–

13: For you did form my inward parts
You didst knit me together
in my mother's womb.
15: My frame was not hidden from You,
When I was being made in secret,
intricately wrought in the depths of the earth.
16: Your eyes beheld my unformed substance...

Thus, when married couples realise how God enters so sublimely and profoundly in the heart,

"Every child comes with the message
that God is not yet discouraged of man!" – **Tagore**

Ann Rana and her new born child.

A couple co-creates with God, in bringing a child not merely
for a transitory existence on this earth, but for a far more
sublime destiny — eternal happiness with Him in the next !

Ann and Oliver Rana with their new born son

as it were, of their intimate sexual act, they learn to appreciate their role in God's plan and discover an abiding sense of joy and honour!

As a consequence, this surely helps us to appreciate the beauty and exalted dignity of human sexuality; and to realise that any thing pertaining to it, (whether it be the sexual urge, the organs of reproduction or the sexual act itself) is no longer something to be embarassed about, or worse still to be considered "dirty."

On the contrary, in the light of what has been said, the gift of sex holds the prime place among all the functions of our body. It becomes truly sublime and beautiful! It is the early appreciation of the beauty and sacredness of human sexuality that will help all of us to respect this gift and to use it responsibly. God wants us to be innocent, but He surely does not want us to be ignorant of His gifts.

Most religions hold and teach that for man, there is a life after death – one of perfect and eternal joy. Now, we all know how uncertain our earthly existence is. It is common experience that death (from accident or disease) can come at any moment; our earthly lifespan can extend from just a minute to 90 years after birth. Does this uncertainty of our earthly life-span make sense? It does make sense, only if we accept the fundamental reality : that by divine design, life after death is our true destiny. Once we grasp and fully accept this truth, we can then realise how the sexual act is truly oriented in God's loving design, not only to bring life for this short-lived existence on this earth, but also – and much more, for the *next* !

In this truth we touch the core of the vocation of marriage : those called by God to the married state are privileged to co-create with Him by using their sexuality to bring children for a life that endures forever ! This is a noble commitment in which parents have to nurture and educate their children in true moral and religious values. Thus *they* play the main role in helping them to achieve their supernatural destiny. In contrast, sexuality of the animal is geared merely to re-produce, so that the species survives.

The human sexual act sanctifies the husband and wife, just as any other human action does, when it is done according to God's will. In other words, being a human act, it makes the marital partners pleasing to Him, bringing them closer to Him, and increasing their state of personal holiness. This too, places the human sexual act at a far higher level than that of the animal.

Experience shows that few persons, even among the married know this; and even if they "know" it, they are not really convinced of it. For this knowledge to become a conviction, a loving, prayerfull (and perhaps a repeated) reflection on this vital truth is needed. Then only will the heart and mind be purified of all unhealthy and twisted attitudes towards sex and lead to an increase of mutual respect between the sexes.

In God's wisdom, the same sexual act is meant to convey not only life but also *love*. Like other physical expressions of love (e.g. the kiss, the embrace) genital union is meant to be a *symbol* of love. In the deeper sense in which the word is used today; "symbol" not only points to an intangible reality but also promotes and increases it. Hence, this physical sexual act is intended not only to express the true love that exists in the hearts of husband and wife, but also to strengthen and increase it!

The physical oneness of the sexual act is meant to express a deeper reality of the "oneness" of mind and heart. That this is what God wanted the marriage act to be, is verified in the first book of the Bible, Genesis 2 : 24 :–

"Therefore a man leaves his father and mother and cleaves to his wife, and they become one flesh." The words "cleaves to his wife" and "one flesh" clearly mean sexual union, but it goes much further to signify a richer meaning viz. that husband and wife become one person. This happens because true love of either partner always places the happiness and needs of the other *before* his or her own. So, the human sexual act is meant to be a sublime and intimate (though not the only) *means* of expressing and fostering marital love*!* In the case of animals there is no question of love being expressed during copulation. Animals mate they do not marry. Thus, in man, in one and the same sexual act there is not only a *life-giving* but also a *love-giving* dimension which immeasurably raises its dignity. Incidentally, it symbolises the purpose of marriage – love ordained for the transmission and service of life.

Lastly, all of God's creatures reflect to a greater or lesser degree, one or another of His qualities, e.g. some reflect His beauty, another His wisdom, a third His power etc. There are two attributes of God that are fundamental to His nature – *life* and *love*. God is life (Christ said : "Before Abraham was *I am*" . . . . "I am the way, the truth and the *life*"). He alone gives life to all, and this He does *freely*. Secondly, God is love; this is essentially the consoling good news the Bible proclaims, particularly in the New Testament; and this love He gives freely*!*

The human sexual act, as we have explained, contains both these elements of life and love. Thus, in this act the marital partners can be so very much God-like, since like Him they can *freely*, both give life and express love! That man is created God-like is well substantiated in the following two biblical texts :–

Genesis 1:27: "So God created man in *His* own *image*, in the image of God He created him."

Psalm 8 : 3–5 : "When I see the Heavens the work of Your hands
The moon and stars which You have arranged;
What is man that You keep him in mind.
Mortal man that You care for him?
Yet You have made him a *little less than God*,
With glory and honour You have crowned him."

Thus, God in His goodness has revealed to us that He has made man God-like; but the most striking feature is, that it is in man's sexuality that this shines out best!

CONCLUSIONS

The following conclusions can be drawn from what has been said above:–

While reading the basic information on the structure and function of the human reproductive system given in part one of this book, the reader would do well not to lose sight of the sublime features and significance of the human sexual faculty that have just been elaborated.

A famous general once said : "The right word is a battle won; an inaccurate word is defeat." What

he meant was that using the right words is essential not only to express the truth but to develop the *right attitudes*; while the use of wrong words would create the wrong attitudes. In the field of human sexuality this is particularly important if we are to develop the right values and attitudes, specially in our youth.

After spelling out the sublime dignity and meaning of the procreative act in man (in contrast to that in animals) to use the same (purely biological) terms e.g. coitus, copulation, mating etc. would create incorrect attitudes and do married couples an injustice. Even the terms "intercourse" or "sexual act" which are commonly used, convey (as mentioned before) to the mind of an average person its purely physical aspect. For that matter, from the physical point of view "intercourse" or the "sexual act" can occur in situations outside the marital relationship, e.g. in fornication, adultery and even in rape. Hence for want of a better term, we prefer to use the words, "conjugal act" or "marital act" in an attempt to show that it is reserved as a sublime expression of love between a man and a woman exclusively in marriage, and in order to emphasise the superiority of human sexuality over that of the animal.

Now, not to use the gift of sex according to God's plan inevitably leads to personal and widespread problems that affect both individuals and the whole society, with disastrous consequences, e.g. rampant pre-marital sex, a rising incidence of unwed mothers, marital infidelity, venereal disease, abortion etc. All these problems are actually a cry for help. Youth are not corrupt; they simply are unable to understand and handle their sexuality because they are ignorant of its beauty and purpose! Hence the need, not of sex information but of sex education.

Finally, as explained above, if the marital act has such a profound meaning and is oriented towards a supernatural purpose, it is reasonable to conclude that the procreation of a child should not be a matter of chance but should be the result of a deliberate and a loving *choice*. In other words it must be an act of *responsible parenthood*. If this is expected of man, then in God's plan there must be provided a means of fertility regulation that is reliable, safe and at the same time in harmony with human dignity (moral), and conducive to a harmonious marital relationship. It has now been established beyond doubt, thanks to scientific research in the last 30 years or so, that the natural phases of fertility and infertility in a woman's menstrual cycle can be defined with sufficient precision to enable couples (even the most illiterate) to regulate birth, with a high degree of success.

How these natural phases in the menstrual cycle are determined by the woman in explained in part two of the book under "methods" of natural family planning (NFP). However, we have used the term "methods" with some reluctance, since NFP is not, strictly speaking a "technique" as other methods are. While the latter suppress or eliminate fertility either temporarily or permanently, NFP helps the couple to a precise awareness of their fertility which is *already there*. Thus, equipped with this knowledge they can decide to avoid or achieve conception depending on the circumstances which they are faced with.

PART-I HUMAN REPRODUCTIVE SYSTEM

FEMALE REPRODUCTIVE SYSTEM (FRONT & BACK VIEWS)

On the left side in Fig. 1 the position of the reproductive organs is shown in relation to the bony pelvis. On the right side details of the reproductive organs are given.

Uterus : of an adult woman who has not borne children is shown; it is 8.9 cms. ($3\frac{1}{2}$ ins.) in length; 6 cms ($2\frac{1}{2}$ ins.) across at the widest part (upper end) and 4 cms. ($1\frac{1}{2}$ ins.) from front to back. The cavity of the uterus including the cervical canal is 7.5 cms. (3 ins.) long; it has a triangular shape when seen from the front. At the bottom end it joins the vaginal cavity through the cervical canal and at the upper end on either side, with the cavity of each uterine tube. The uterine cavity is lined by a layer of cells called the **uterine lining** (or endometrium). This lining is under the control of the hormones secreted by the ovary.

Cervix : is the barrel-shaped lower end of the uterus, 2.5–3.5 cms. long, when measured vertically. Its lower half dips into the vagina. The cervical canal is spindle-shaped. Its lower opening which communicates with the vagina is called the **external os** (mouth); while its upper end that opens into the uterine cavity is called the **internal os**. The mucous membrane lining the cervical canal dips down to form complex pouches called **crypts** which secrete an alkaline mucus, which helps the sperms to live. A more detailed diagram of these crypts is given later.

Vagina : is an elastic muscular canal about 7.5 cms. long. It is lined by mucous membrane which has folds that give it a wrinkled appearance.

Ovary : these are two in number and are the female sex glands. Each one is 4 cms. long, 2 cms. wide and less than 1 cm. thick, and is held in position by an ovarian ligament as shown. They have two functions, to produce ova (female sex cells) and to secrete two hormones, oestrogen and progesterone. Both ovaries contain at birth 300,000 to 400,000 ova but by puberty this figure is at least halved. The right ovary is cut open; it shows **follicles** in different stages of development. Each follicle is a nest of cells surrounding an ovum.

Tube : There are two tubes, each is 10 cms. in length. They extend from the uterus to the ovary on either side. Each uterine tube has a muscular wall surrounding a cavity which is meant to convey the ovum from the ovary to the uterus. The outer end is funnel-shaped with a number of finger-like processes called fimbriae. The tubal movements and activity of the lining are under hormonal control.

Bartholin's glands : are situated one on either side of the vagina. They are oval in shape, and each is about the size of a pea. In response to sexual excitement they secrete a considerable amount of a colourless liquid with a characteristic odour, that lubricates the vaginal opening for the marital act.

The remaining structures shown in Fig. 1 (e.g. the major and minor lips) will be described later.

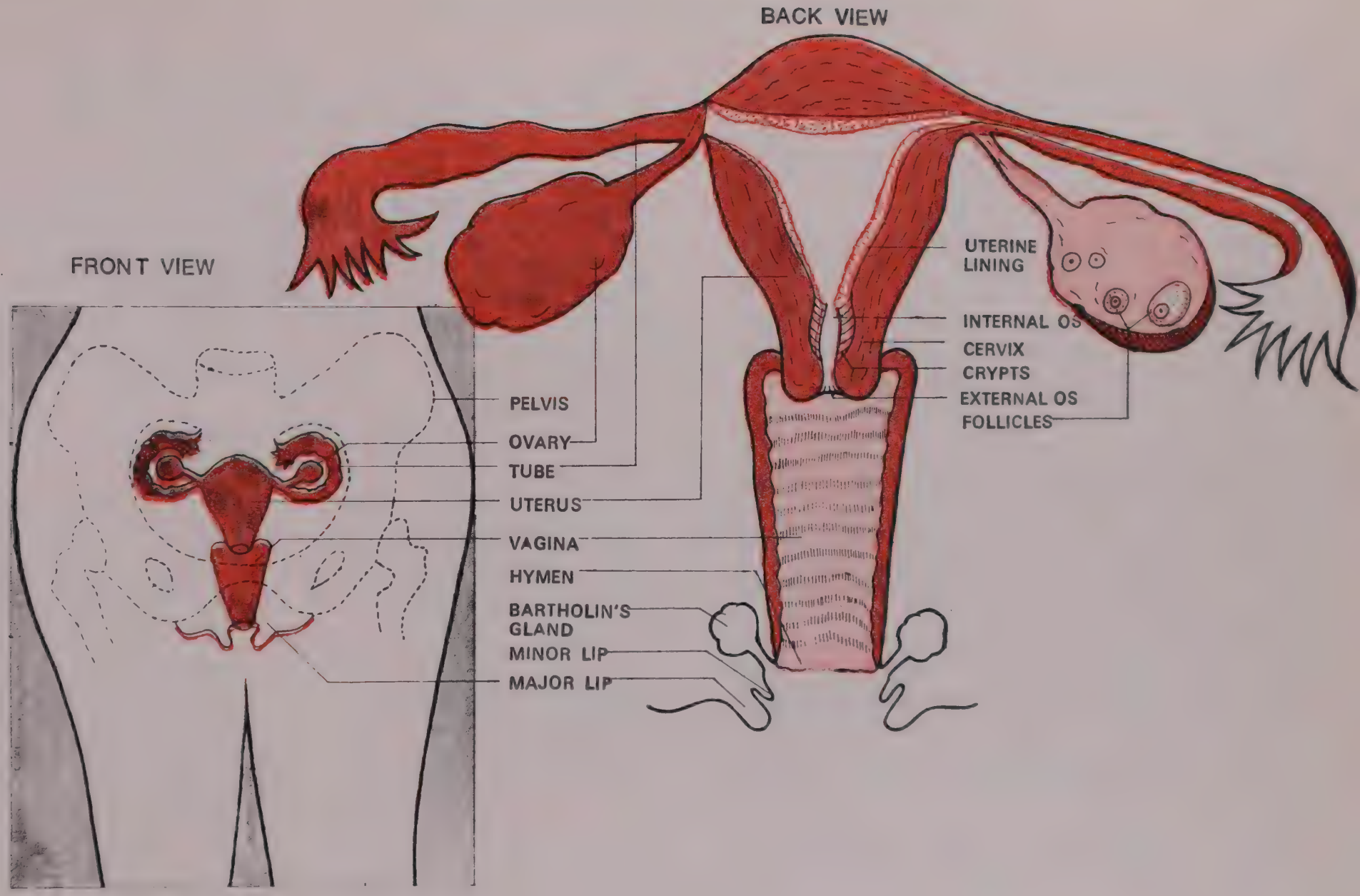

Figure 1 FEMALE REPRODUCTIVE SYSTEM (FRONT & BACK VIEWS)

FEMALE REPRODUCTIVE SYSTEM (SIDE VIEW)

This figure is meant to show the reproductive organs from another angle and in relation to the bladder in front and the rectum behind. Notice that when the woman stands erect, the uterus is bent forward on itself, in an almost horizontal position, with the vagina roughly at right angles to it. The body of the uterus lies a little above the level of the symphysis pubis. In this side view one observes that the uterine cavity is no more than a slit with its front and back walls almost touching each other. The right tube with its funnel-shaped end is shown curving around the right ovary; the ovarian ligament is also seen.

Vagina : extends downwards and forwards from the cervix to the vulva and opens into a space between the minor lips. Normally the vaginal cavity is obliterated, as the front and back walls are in apposition. Though the vaginal wall does not contain glands, under sexual excitement it "sweats" tiny beads of fluid which are meant to act as a lubricant during the marital act. The vagina has three functions: to receive the penis during the marital act; to convey menstrual blood out of the body; and to act as a passageway for the birth of the baby. In front of the vagina lies the base of the bladder and the urethral passage.

Pubic symphysis : is the joint of the two pubic bones; it lies in front of and a little below the bladder. In the figure it shows an oval shape in cross-section.

Bladder : is a hollow muscular organ that stores urine coming down from the kidneys and excretes it out of the body through the urethra.

Rectum : is the lower end of the large bowel; it is meant to excrete the solid waste matter from the body. It lies in close proximity to the genital organs.

It is worth noting that, unlike the male reproductive system the urethra in the female is independent of the genital tract, and that the sexual organs are hidden deep within the abdominal cavity.

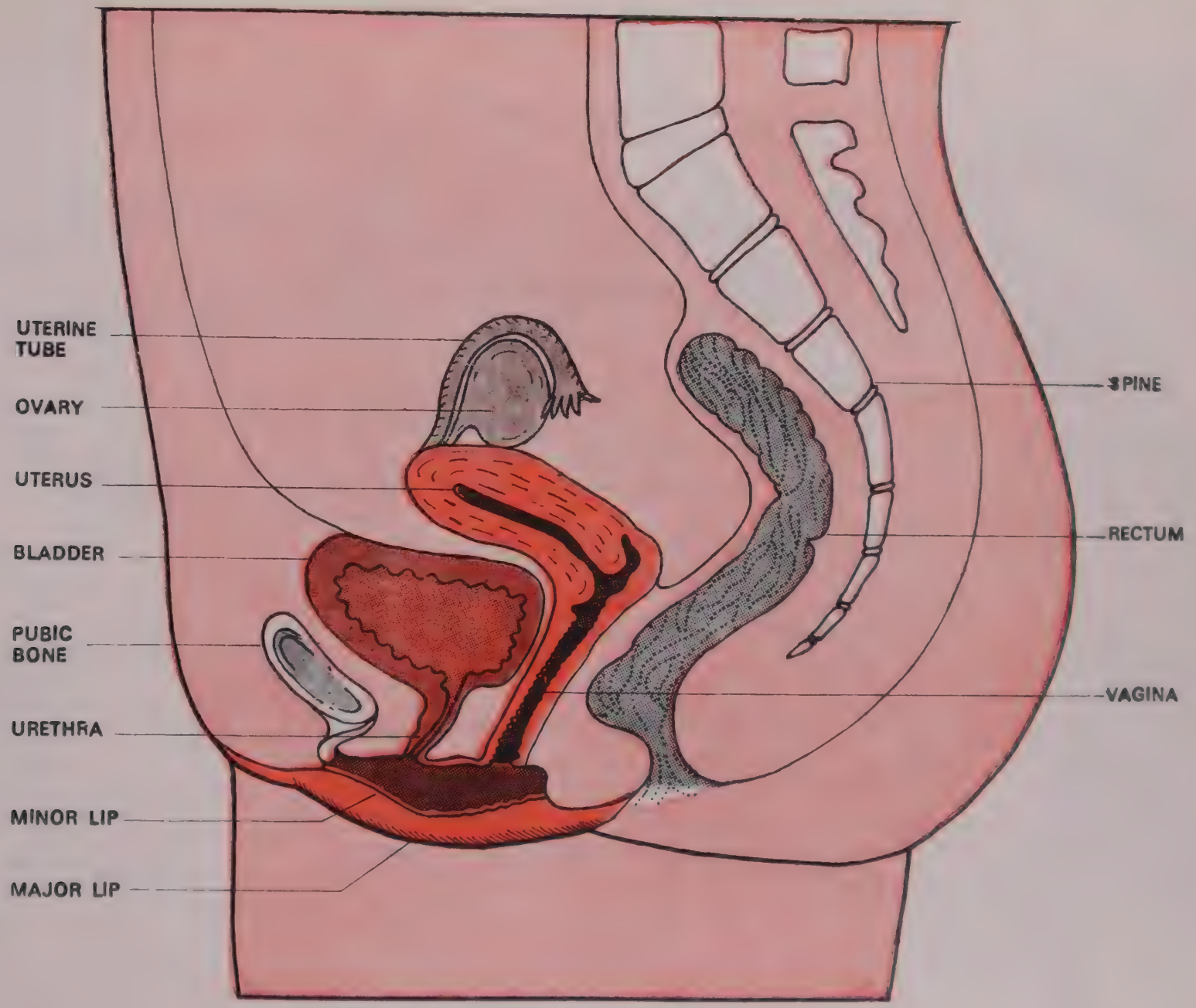

Figure 2 FEMALE REPRODUCTIVE SYSTEM (SIDE VIEW)

INTERNAL STRUCTURE OF THE OVARY

This figure presents the internal structure of the ovary of an adult woman. It shows a number of rounded spaces of varying size called follicles supported by connective tissue. Each of these house an ovum surrounded by a cluster of tiny cells. All the stages of development of the follicle, (primary, maturing and mature) are seen in the ovary at the same time. These stages are shown from right to left. in Fig.3.

Primary follicles : This is the state of all follicles at infancy. Each contains a large cell called the *oocyte* (the earliest stage of the ovum) surrounded by a layer of small flat cells.

Maturing follicles : The oocyte becomes larger and the surrounding cells enlarge and multiply until they are several layers deep. Fluid-filled spaces appear which coalesce pushing the ovum to one side.

Mature follicle (5–8 mm in diameter) : is the largest follicle seen in the figure with a large amount of fluid. On the extreme left the wall of the ovary is thinned out and is bulging due to a mature follicle that is tense with fluid and about to release a mature ovum.

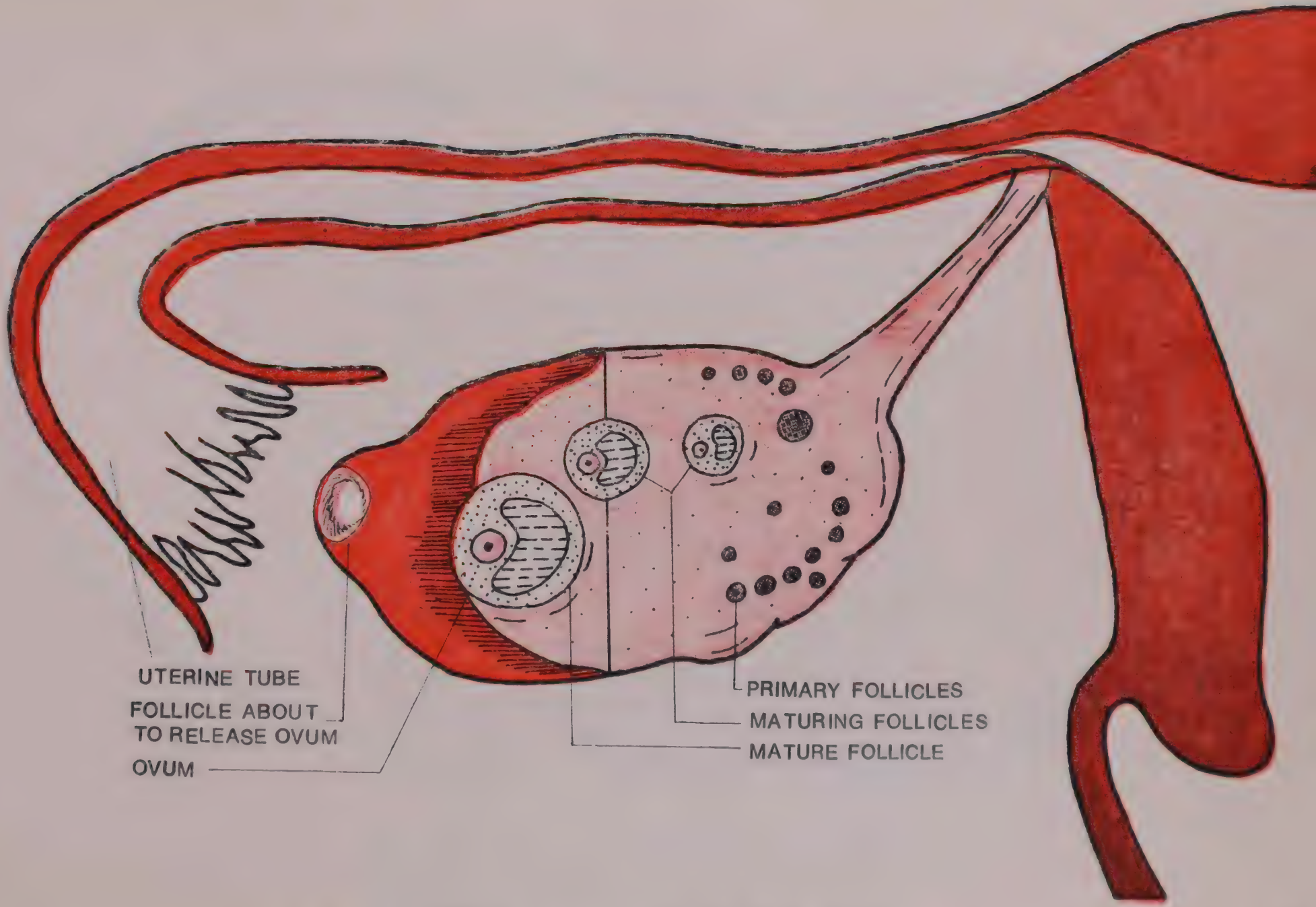

Figure 3 INTERNAL STRUCTURE OF THE OVARY

OVULATION

This figure shows a follicle that has just released an ovum. This important event occurs in the following way :

Due to the pressure of the fluid inside the follicle a small opening appears in the thinnest part of the bulge through which some follicular fluid oozes out. After a short while, the ovum together with its surrounding cells detach themselves from the side of the follicle and escape through the opening in the ruptured follicle. Rarely, a slight bleeding takes place at the site of the rupture. This release of an ovum from a mature follicle is known as *ovulation;* it is a comparatively gradual process taking several seconds or minutes. Once ovulation occurs the other few follicles that were also maturing cease to develop and soon degenerate.

As the moment of ovulation approaches, the outer end of the tube moves towards the ovary and its finger-like processes cap it and are ready to receive the ovum. Once the ovum appears it is wafted into the tube by the current of fluid created by the hair-like processes (ciliae) of the tubular cells and also by muscular contractions of the tube. This 'capping' function of the outer end of the tube is vital, otherwise the ovum would be lost.

Infection of the tubes due to tuberculosis or gonorrhoea is a common cause of infertility in women. Recently, it has been found that infection following the use of the intra-uterine device (IUD) also leads to infertility.

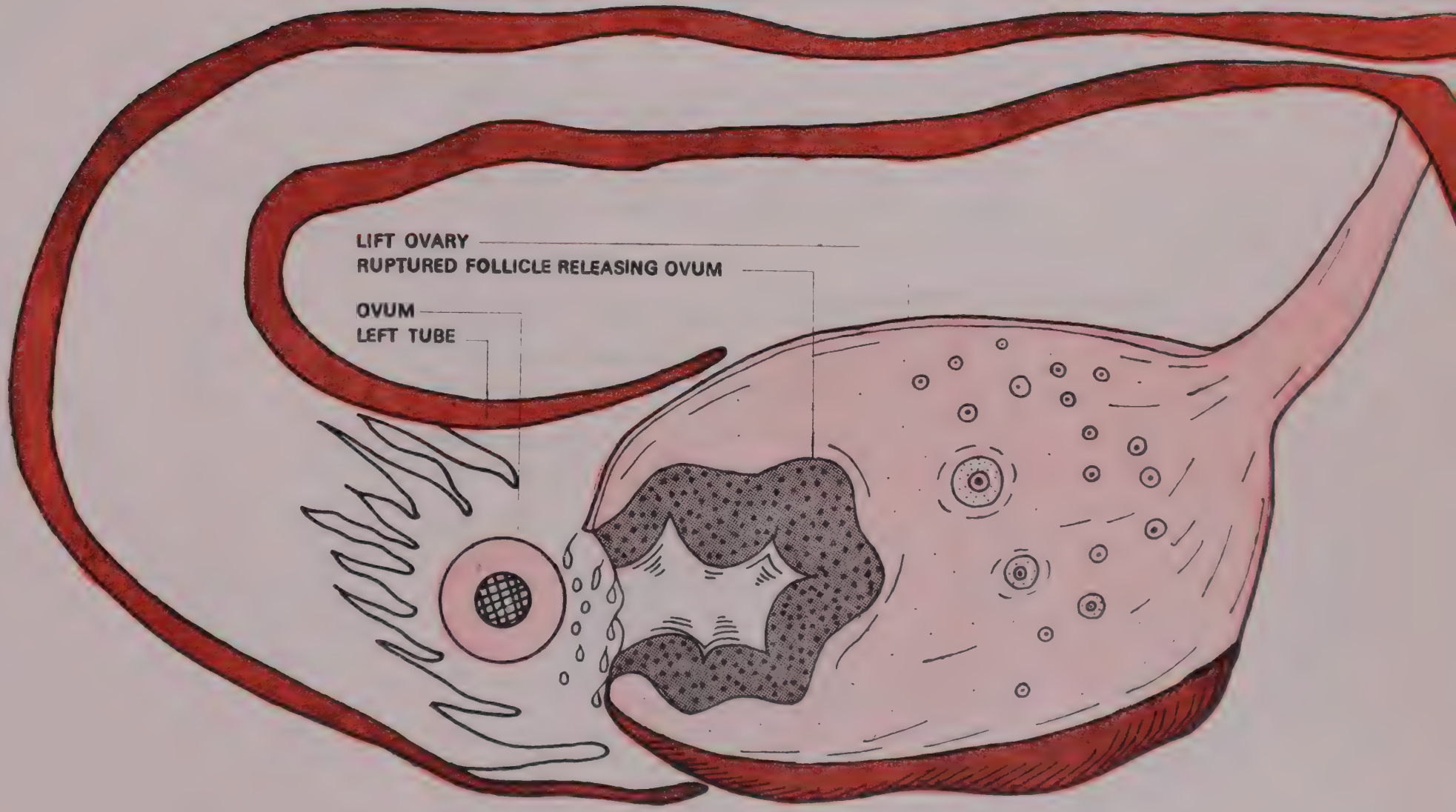

Figure 4 OVULATION

OVUM INSIDE UTERINE TUBE

Fig. 5 shows the ovum inside the left uterine tube. It is pushed towards the uterus by the tubal muscular contractions and the current of fluid moving in that direction. If the ovum is not fertilised, it breaks up (as shown diagrammatically) without leaving any trace. However, ova have been found both in the tube 2–4 days after ovulation and in the uterus 4–5 days after ovulation. These are probably dead if not already fertilised.

The Yellow Body : After the ovum is discharged, marked changes occur in the follicle. The lining cells swell and also multiply to pack the cavity of the follicle. Because these cells look yellow to the naked eye the structure is called the yellow body; an active yellow body is 1–2 cms. In diameter and bulges slightly from the surface of the ovary.

The formation of the yellow body takes about 5 days; during this time it is already functioning; it continues to produce oestrogen and begins to secrete a new hormone *progesterone* that is meant to thicken the lining of the uterus for a possible conception and suppresses the ripening of further ova till the end of the cycle. It has other functions which will be given later. The yellow body shows maximum activity for the next 3–4 days, after which degenerative changes begin to be seen 4–5 days before the next menstrual period begins.

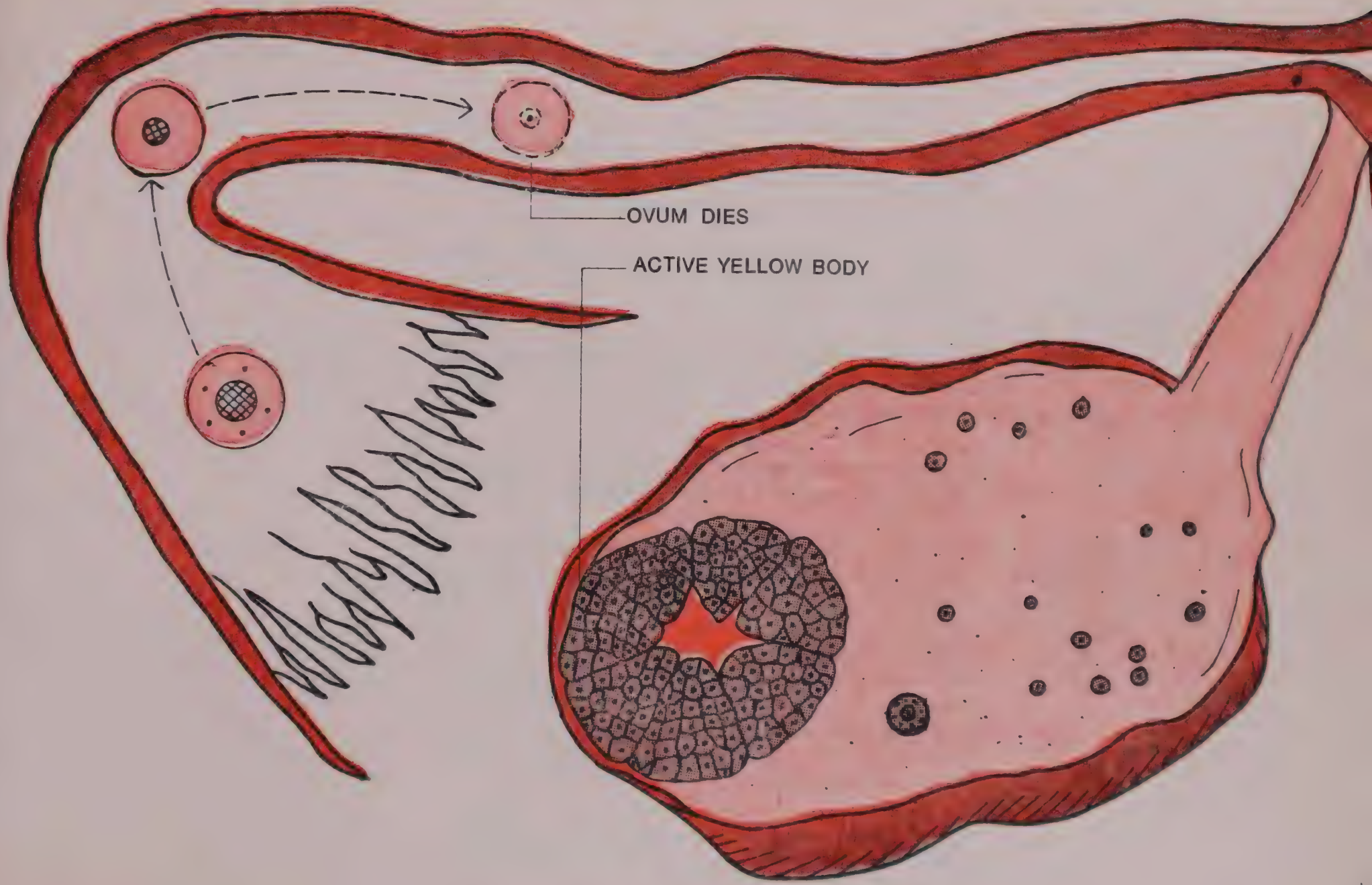

Figure 5 OVUM INSIDE THE UTERINE TUBE

THE OVARIAN CYCLE

Fig. 6 summarizes the changes in the ovary that have been described before :

Stage 1–2 : Several follicles (about 5–7) begin to mature under hormonal stimulation from the pituitary gland situated in the brain. Usually one follicle matures faster than the others.

Stage 3 : A mature follicle containing an ovum, follicular cells and plenty of liquid. It has reached the surface of the ovary.

Stage 4 : Ovulation has occurred from a mature follicle. The others begin to regress and eventually degenerate.

Stage 5 : An active yellow body begins to secrete progesterone and continues to produce oestrogen.

Stage 6 : The activity of the yellow body starts to weaken 4–5 days before the next menstrual period begins. Within a few days of the yellow body beginning to degenerate a fresh crop of follicles begin to ripen, and the whole ovarian cycle is repeated. Side by side, a menstrual cycle also commences with the appearance of menstruation. How the ovarian and menstrual cycles are co-related will be explained later and illustrated with a special diagram.

Stage 7 : Atrophic yellow body; the new crop of follicles ripen further, one slightly ahead of the other.

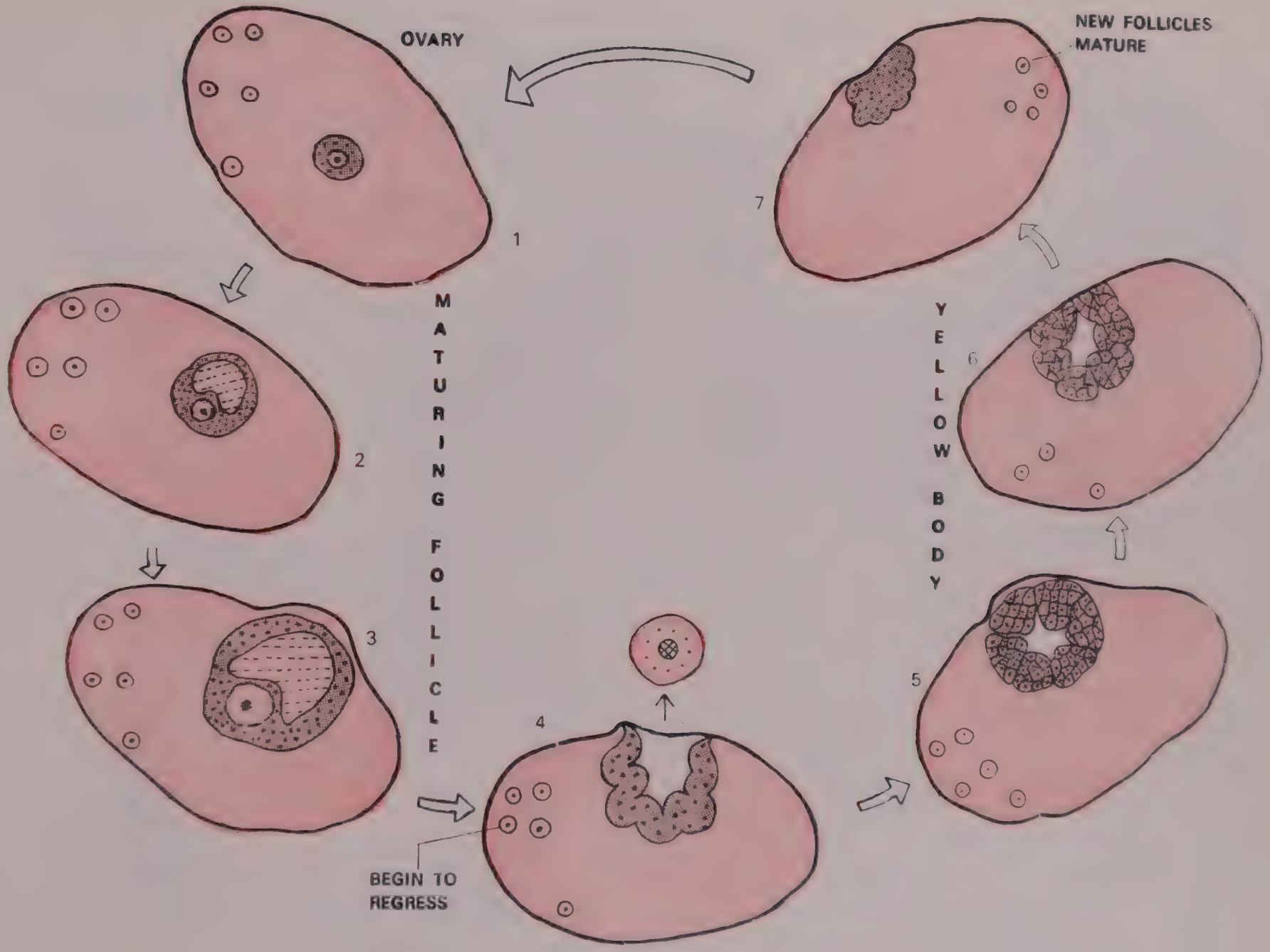

Figure 6 THE OVARIAN CYCLE

UTERINE LINING AT THE END OF MENSTRUATION

The next four figures (Figs. 7–10) shows the changes in the uterine lining (produced first by oestrogen and later by progesterone as well) to make it fit to nourish a possible conception. Fig. 7 shows the start of this process at the beginning of the menstrual cycle.

Even before menstruation has ended, the repair of the uterine lining begins under the stimulation of oestrogen secreted by the maturing follicles of the ovary. About three days after the menstrual period has ended the surface of the uterine cavity which was shed, is completely restored. It has a thickness of 1 mm.

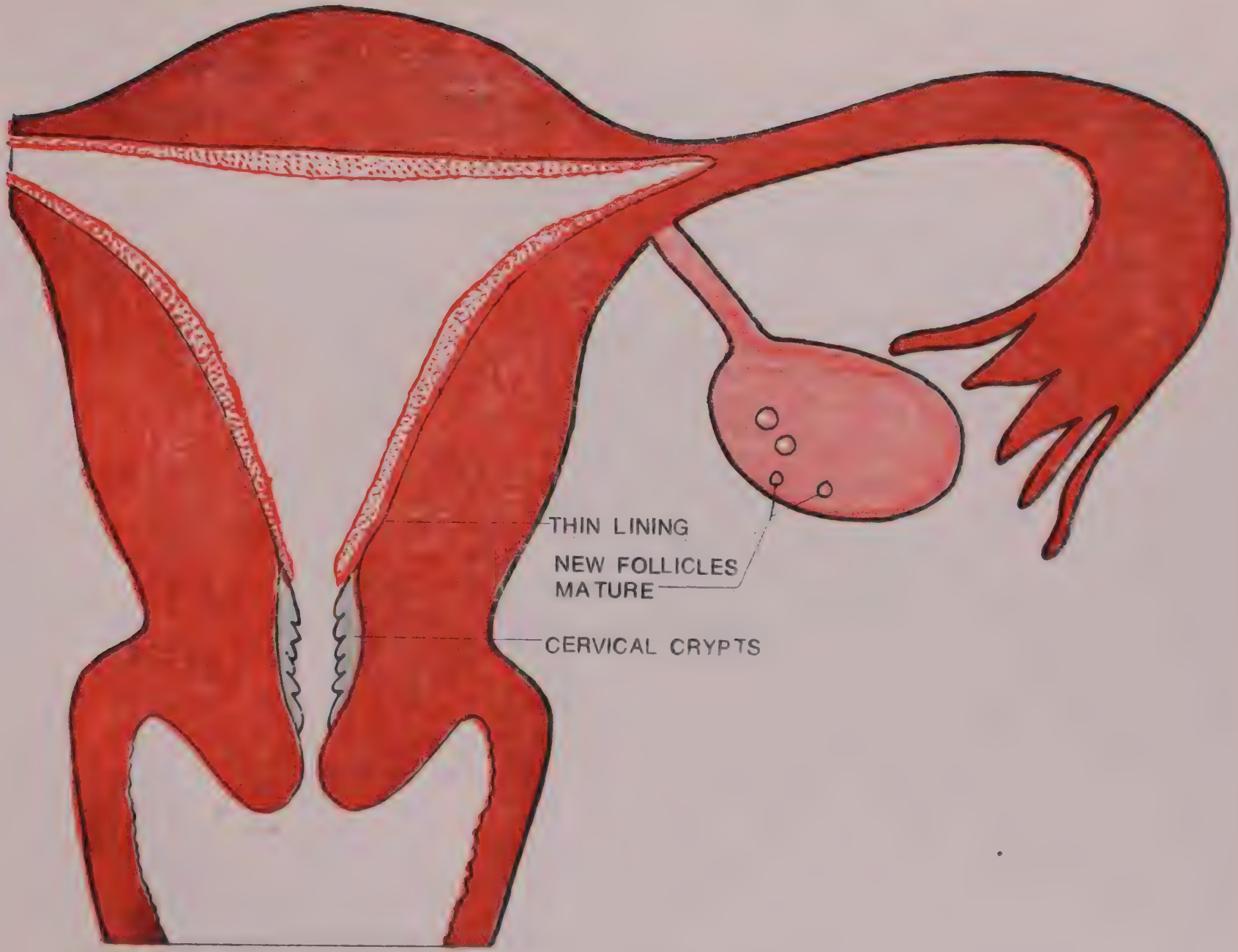

Figure 7 LINING OF THE UTERUS AT THE END OF MENSTRUATION

UTERINE LINING AT THE TIME OF OVULATION

Fig. 8 shows the state of the lining at the time of ovulation. Its thickness has quadrupled under the influence of the rising level of oestrogen. This phase extends from the end of menstruation till ovulation and is called the **proliferative** phase; at the end of this phase (just before ovulation occurs) the lining is 2–3 mm. thick.

Oestrogen also stimulates the cervical crypts to secrete mucus which begins to flow about 4–5 days before the actual day of ovulation. At the outset this mucus is thick, sticky and opaque; it gradually becomes more and more thin, slippery and clear, resembling raw egg-white; these features are seen best, just before ovulation occurs as shown in this figure. This raw egg-white type of mucus has properties that favour easy passage of the sperms through the cervix, and which also helps them in their long journey through the uterine cavity and into the tubes.

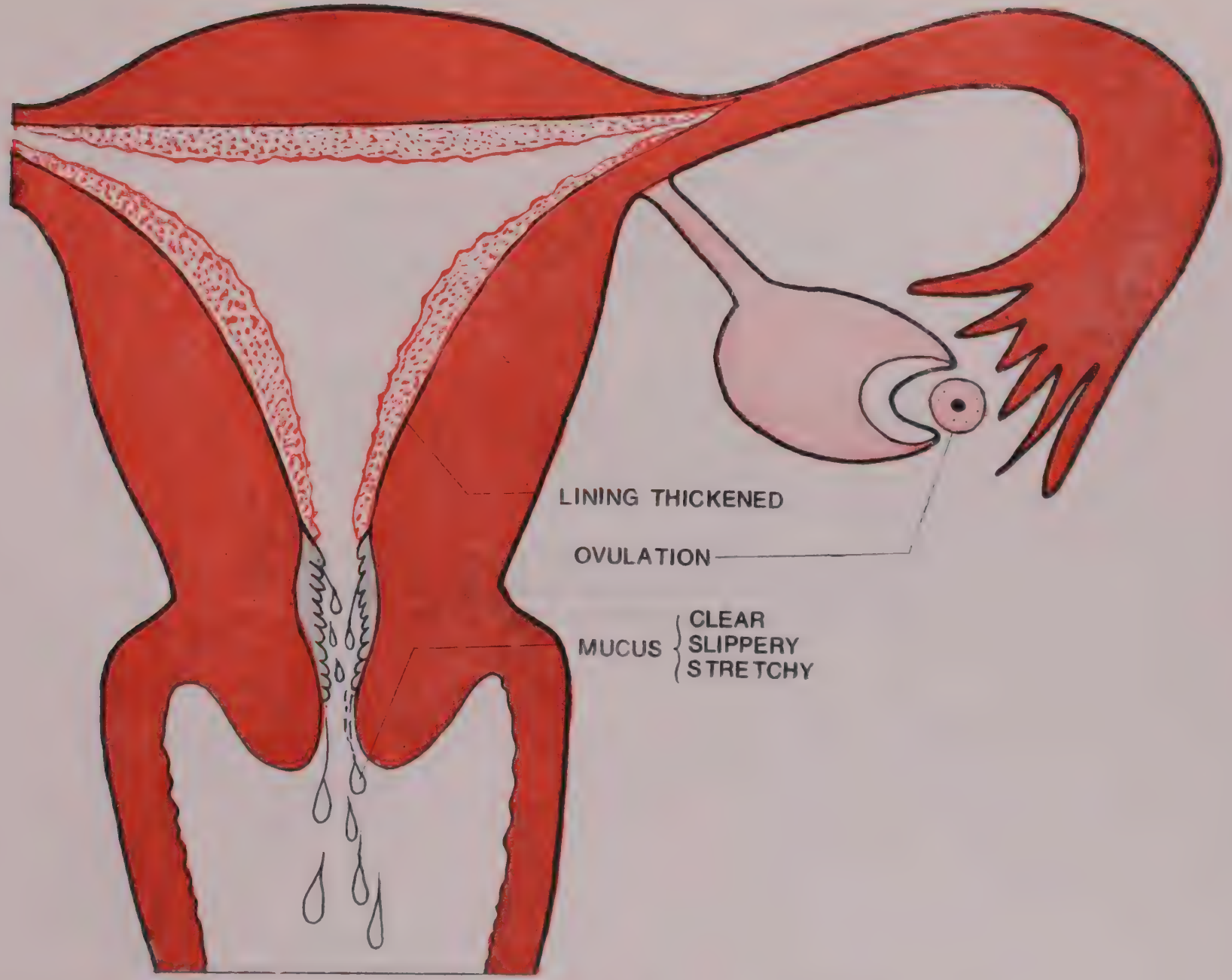

Figure 8 LINING OF THE UTERUS AT THE TIME OF OVULATION

UTERINE LINING MUCH AFTER OVULATION

After ovulation the endometrium thickens further because it becomes more vascular, its glands become more tortuous and filled with mucus, and the supporting cells inbibe water etc. Towards the the end of the menstrual cycle tiny "lakes" of blood appear just under the surface layer of cells. Due to these changes the lining appears spongy and in its final stage it has a saw-tooth appearance, to reach a maximum thickness of 5–7 mm.

All these changes are due to the hormone progesterone acting in the presence of oestrogen. Progesterone also thickens the cervical mucus, makes the cervix itself firmer and the cervical opening smaller.

This phase extends from after ovulation till the last day before the next menstrual period begins and is called the **secretory** or luteal phase.

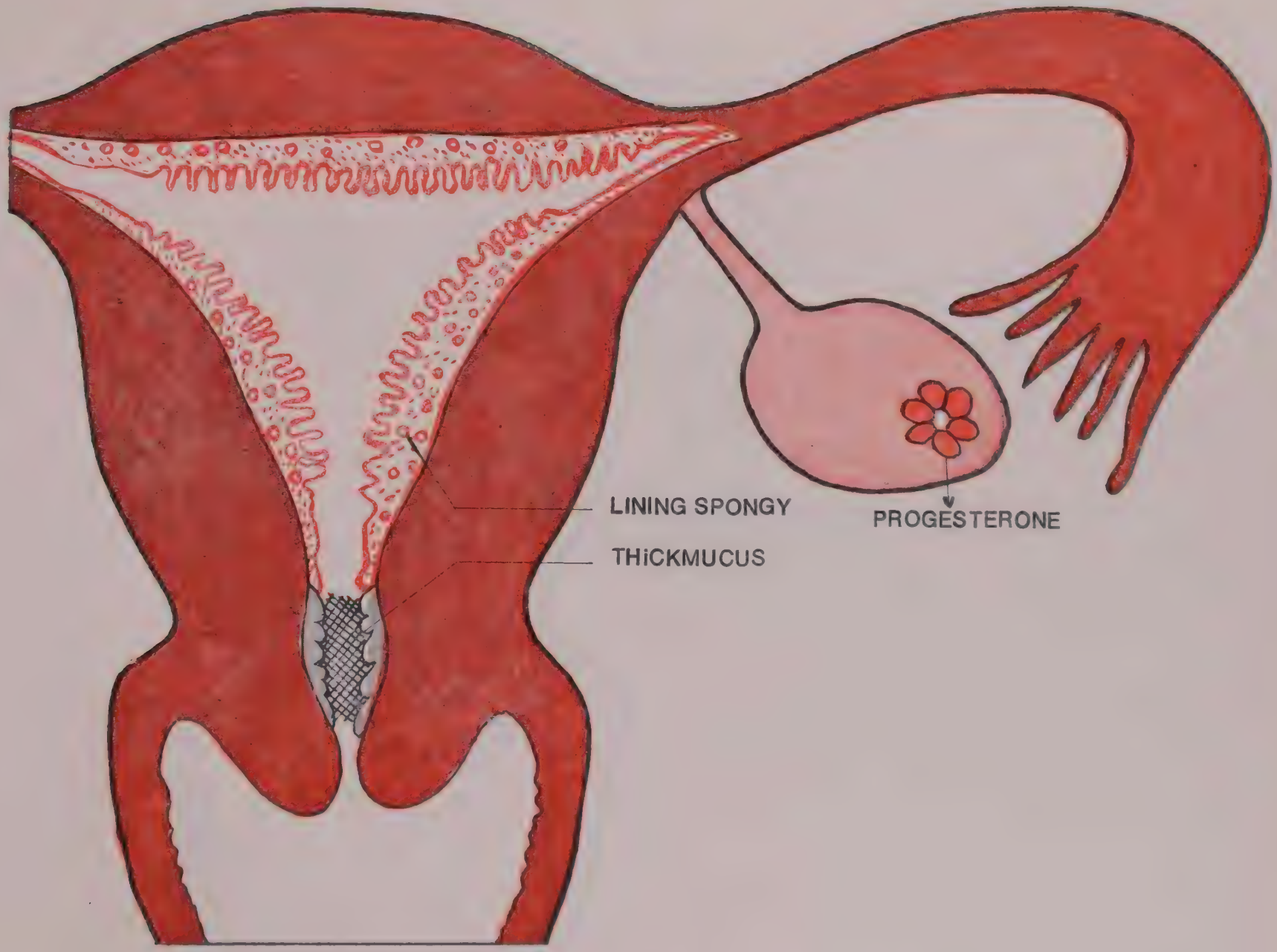

Figure 9 LINING OF THE UTERUS MUCH AFTER OVULATION

MENSTRUATION

Towards the end of the menstrual cycle because the yellow body begins to degenerate there is a drop in the level of the two hormones progesterone and oestrogen which it produces. Once the level drops completely, the uterine lining begins to break down because their hormonal supports are withdrawn. The lining is not shed en masse, but in pieces. The discharge consists not only of blood but also of the epithelial lining, mucus and other cells. The bleeding is called **menstruation** or **menses**, and the number of days it lasts is called the **menstrual period**. The period varies from 3 to 7 days.

Menstruation represents the shedding of the lining that was prepared for a conception which did not occur. Dr. Powers (a famous obstetrician) rightly said : "Women menstruate because they do not conceive."

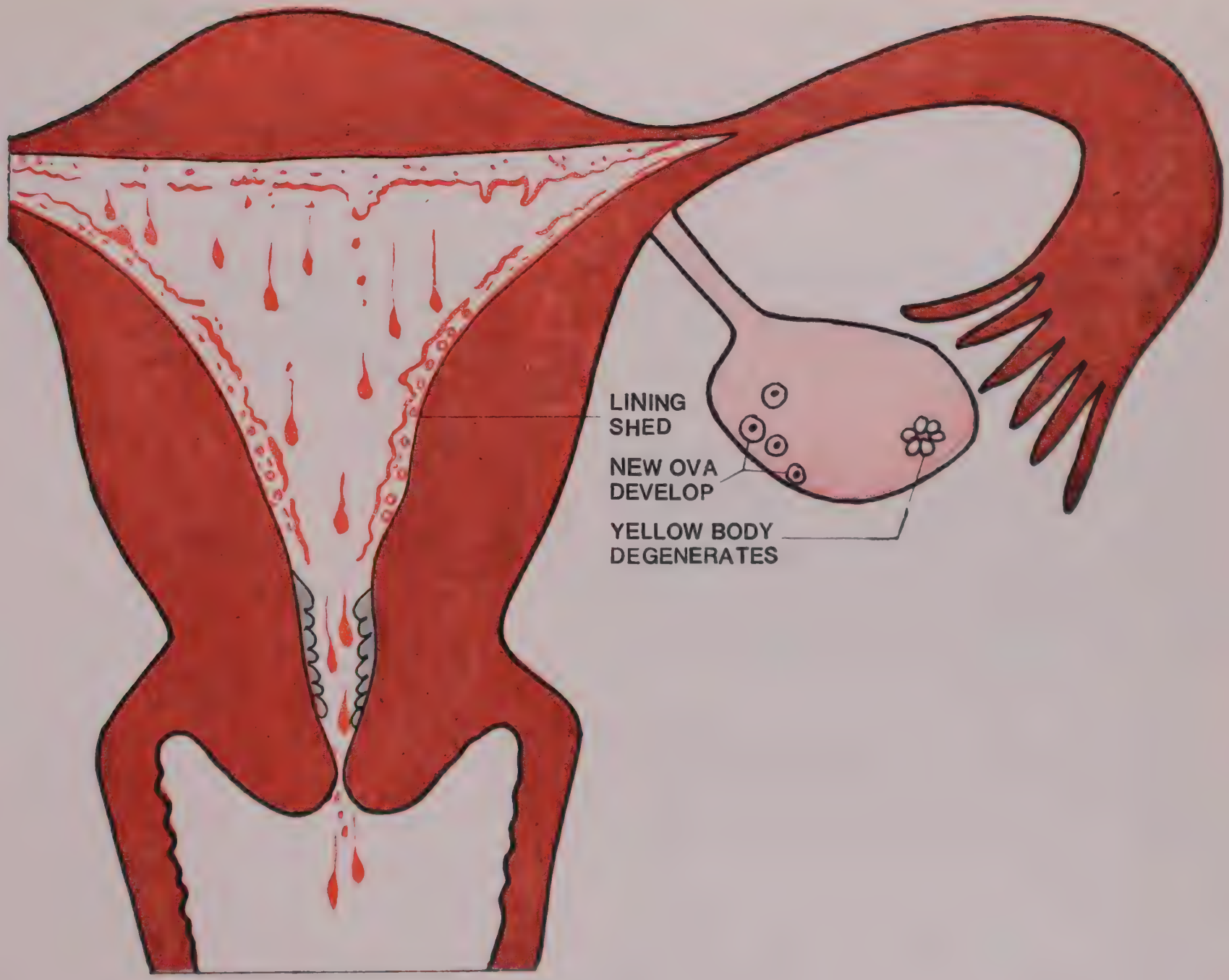

Figure 10 MENSTRUATION

CORRELATION OF THE OVARIAN, UTERINE & HORMONAL CHANGES

Figure 11 summarises in three tiers, the ovarian, uterine and hormonal changes that have been described in the preceding pages, and their inter-relationship.

The first tier : the ovarian cycle in which the development of a follicle upto ovulation, and the formation of a yellow body thereafter is shown. In the pre-ovulatory phase the follicle produces only oestrogen; in the post-ovulatory phase it also secretes progesterone.

The second tier : shows the uterine cycle viz. the changes which the lining of the uterus undergoes (under stimulation of both the ovarian hormones) with a view to preparing it for a possible conception. In the pre-ovulatory phase, oestrogen alone acts on the uterine lining and thickens it (stage 1–4), while in the post-ovulatory phase the influence is mainly that of progesterone, though not exclusively (stages 5 and 6).

Besides the effect on the lining, oestrogen stimulates the cervix to secrete mucus just before and during ovulation as shown in stages 3 and 4; while progesterone thickens the cervical mucus (after ovulation) which forms somewhat of a plug in the cervical canal (stage 6).

The third tier : shows the blood levels of oestrogen and progesterone, in relation to the menstrual cycle. Notice that oestrogen reaches its peak just *before* ovulation; then it drops steeply to rise again. Progesterone is produced after ovulation by the yellow body; when the latter degenerates completely, both hormone levels fall to zero, consequently, the uterine lining having lost its hormonal support breaks down and menstruation occurs. (stage 7).

This figure should be seen horizontally and then vertically to appreciate the inter-relationship between the important physiological events that occur during the course of the menstrual cycle.

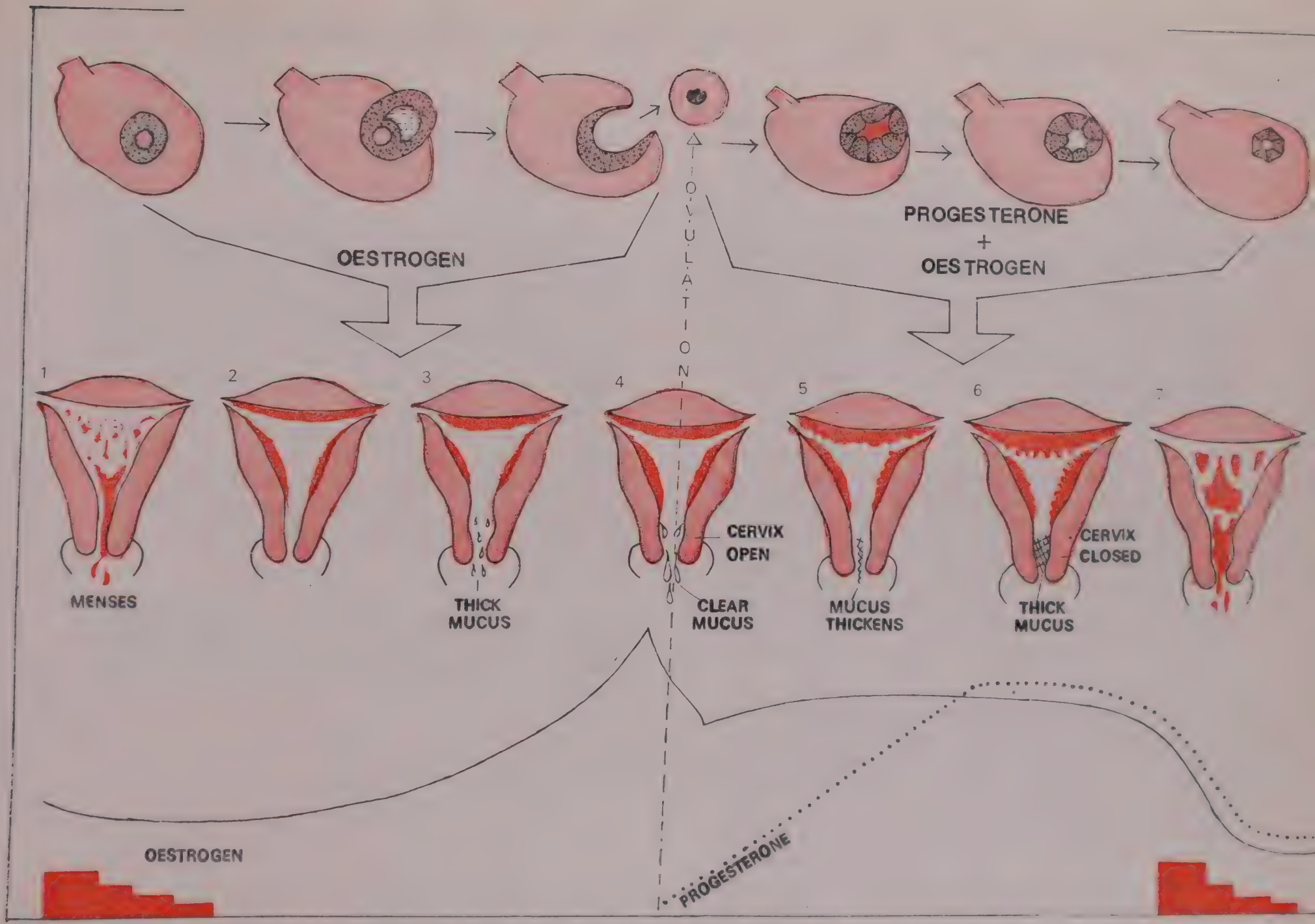

Figure 11 CORRELATION OF THE OVARIAN, UTERINE AND HORMONAL LEVELS

OVULATION HAS A FIXED TIME-RELATIONSHIP TO THE NEXT MENSTRUATION

Till about 1930, it was not known when ovulation exactly occurred in relation to the menstrual cycle. It was Knaus an Austrian, and Ogino a Japanese, who (almost in the same year) discovered that in normal healthy women, ovulation has a definite time-relationship to the *next* menstrual period. Knaus stated, that whatever the length of the cycle, ovulation occurs on the 15th day before the next period begins, counting back; i.e. there is exactly a 14-day interval (he said) between the day of ovulation and the first day of the next period.

However, this time-interval is not that precise, as shown by the research work of Ogino. He proved (by direct observation of the ovaries at surgical operations) that, *irrespective of the length of the cycle*, the occurrence of ovulation varies between 12 to 16 days, counting back from the first day of the next period; the *average* being 14 days. In healthy women within the reproductive age group, this 14-day time-interval is quite constant.

This basic discovery of Ogino is illustrated in Fig. 11-a in a long, an average and a short cycle as examples. The point to observe is that the time-interval between the day of ovulation and the first day of the next period is the same – an average of 14 days even though the cycles are of different lengths, 35, 28 and 23 days. The range of variation (as found by Ogino) being 12-16 days. In other words it is the post-ovulatory phase of the cycle that remains fixed, whatever the cycle length. With a change in cycle length, it is the pre-ovulatory phase that shortens or expands like an accordion: the longer the cycle, the longer this phase usually becomes; the shorter the cycle, the shorter is this phase.

What is the physiological reason why the next period always begins 14 days (on an average) after ovulation takes place? This is because the "yellow body" (see Fig. 5) that is formed in the follicle of the ovary from which the ovum was released has an average life-span of 14 days, with a range from 12-16 days. Once this yellow body degenerates completely, its hormones (oestrogen and progesterone that are meant to sustain the lining of the womb) fall to zero level. Consequently without this hormonal support, the lining breaks down and menstruation begins 14 days (on an average) after ovulation has occurred.

Ogino's discovery contributed much in understanding the fertility of a woman and greatly helped in developing natural methods of birth regulation.

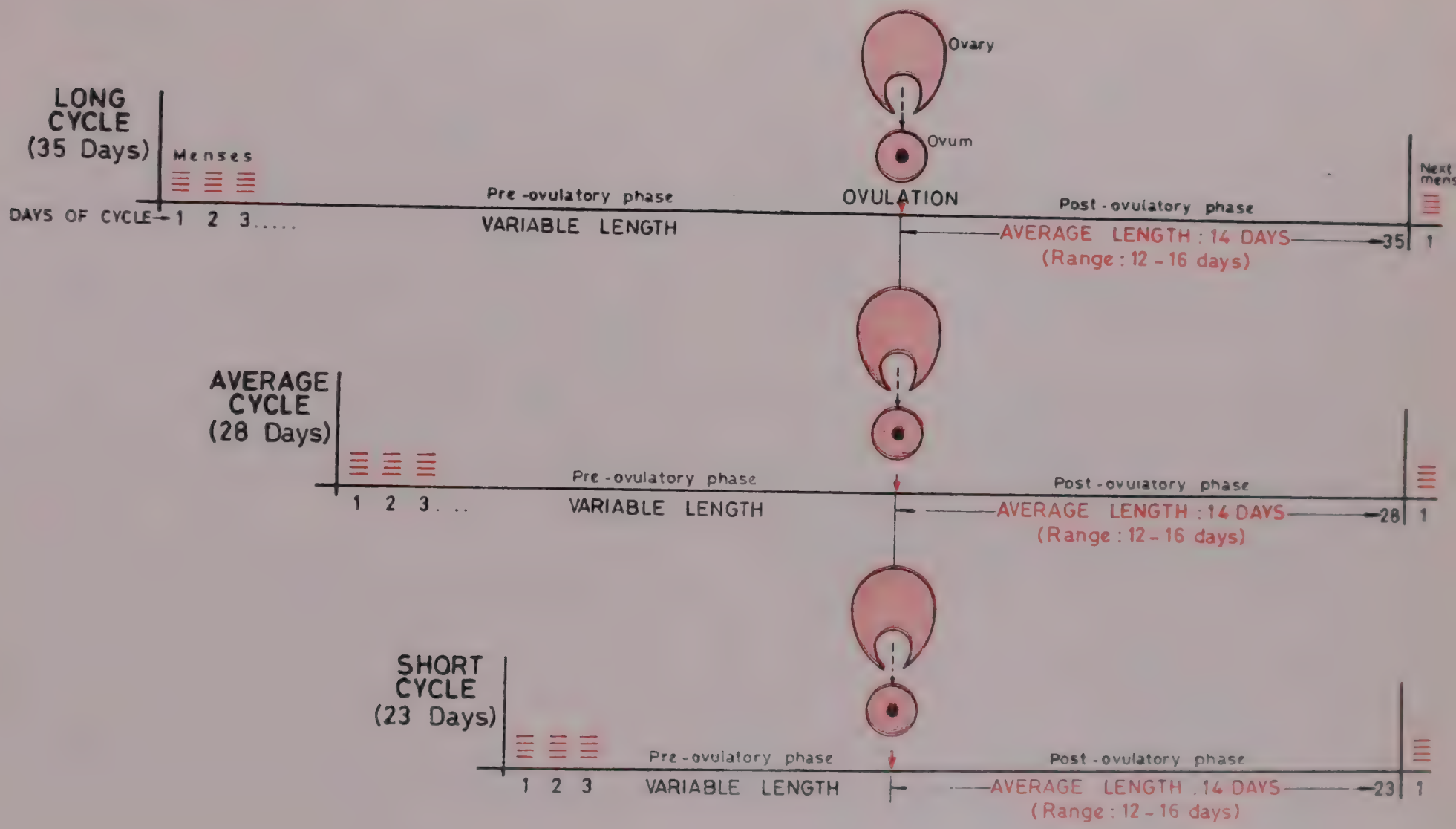

Figure 11-a OVULATION HAS A FIXED TIME-RELATIONSHIP TO THE NEXT MENSTRUATION

VULVA (EXTERNAL FEMALE GENITALIA)

The vulva is made up of the following structures that surround the entrance to the vagina, each of which has its own function:

Major lips: are two large folds of skin, the inner surface of which lie in contact with each other and closes the vaginal entrance. The outer sides are covered with coarse hair. At the upper end they join the skin called **mons pubis**. The latter is the hair-bearing area and has a fatty pad underneath that overlies the symphysis pubis.

Minor lips: are two delicate flaps of soft skin, one on either side of the vaginal opening. These vary considerably in size; ordinarily their inner surfaces touch each other. At the upper end they split into two folds to encircle the clitoris. The upper fold of skin called the **prepuce** is meant to protect the clitoris. The minor lips are very vascular and become turgid during sexual excitement.

Clitoris: (the female equivalent of the penis in the male): is about 2.5 cms, long, consisting of erectile tissue which fills with blood during sexual excitement and is extremely sensitive to touch as it is richly supplied with nerves. It is the most erotically sensitive part of the vulva. Normally, only its tip (glans) and its covering (prepuce) are visible.

Vestibule: is the cleft between the minor lips. Into it open the urethra, the vagina and the Bartholin's glands.

Urethra: is the urinary passage; in this figure its external opening only, is seen.

Hymen: is a delicate annular fold of membrane which surrounds the vaginal opening. The fold is wider at the lower position, hence it tends to have a crescentic shape. The first sexual act nearly always causes it to tear, with only a slight loss of blood, since it is relatively avascular. An intact hymen is not a reliable sign of virginity, since digital interference, operations, insertion of tampons etc. can injure and tear it. Moreover the sexual act can sometimes take place without a tear resulting. If the wife is fearful and ignorant of sexual knowledge, the stretching and tearing of the hymen at the first marital act may cause pain.

Bartholin's glands: as mentioned before, are two pea-sized glands, one on either side of the vagina; their secretion moistens the vaginal entrance to help the penis penetrate the vagina without discomfort.

Anus: is the terminal opening of the large intestine, through which the solid waste matter from the body is excreted.

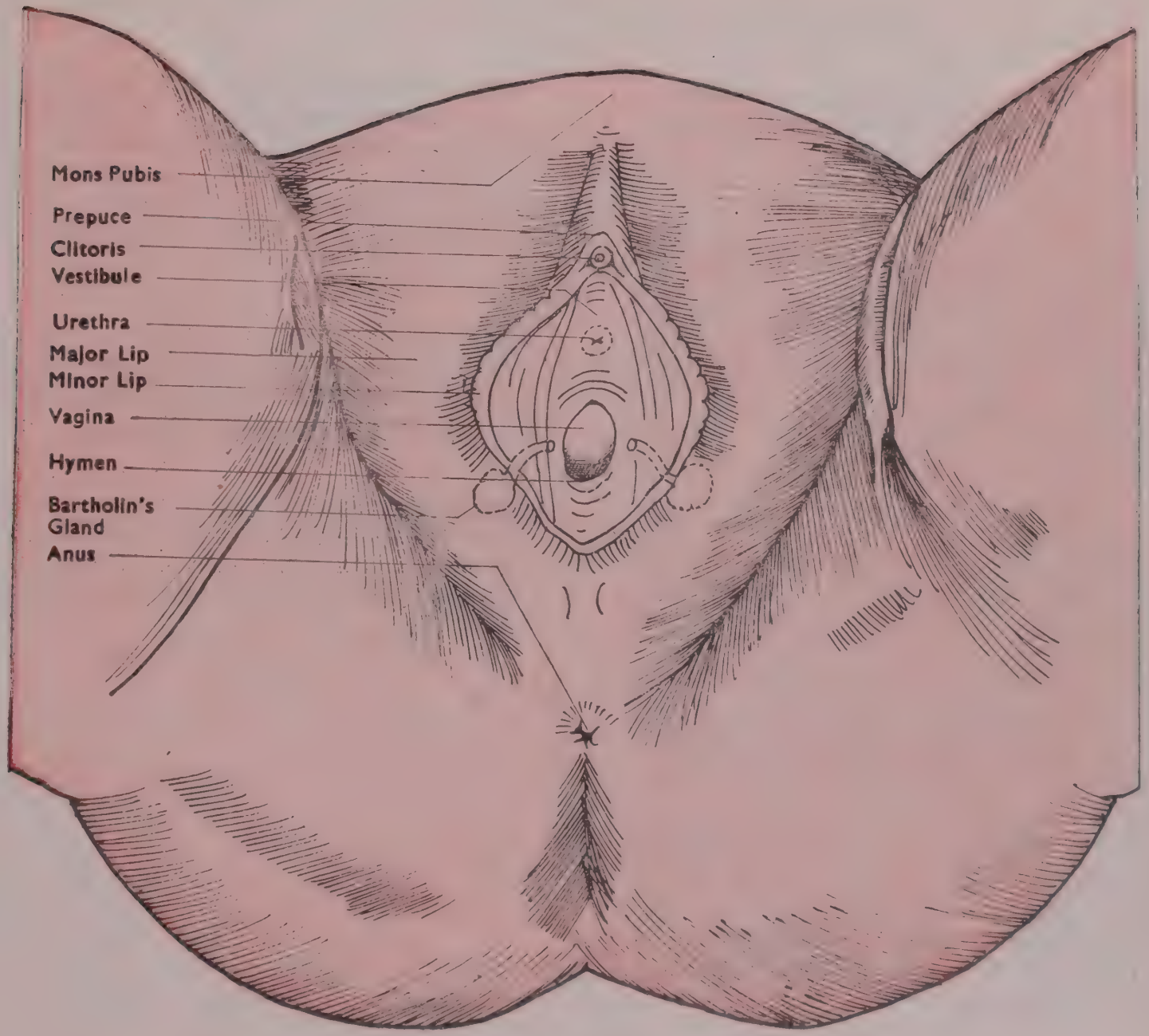

Figure 12 VULVA (EXTERNAL GENITALIA)

MALE REPRODUCTIVE SYSTEM (FRONT VIEW)

On the left side, in Fig. 13, the rectangle delineates the external sexual organs in relation to the body. On the right side details of both the external and internal sexual organs are given.

Testis (or testicle): is the male sex gland, which are two in number; each is about $1\frac{1}{2}$ inches long in the adult male. The testis has two functions: to produce **sperms** which are the male sex cells, and to secrete the male sex hormone, testosterone. The latter is responsible for the growth and maintenance of the male secondary sexual characters.

Sperm production in an adult male is a constant process which goes on from puberty to a ripe old age. It takes about 10 days for the original cells in the tubules to develop into fully formed sperms.

Epididymis: is a highly coiled tube that is part of the testis. The newly formed sperms remain in this tube for several days where they mature, before passing into the sperm ducts.

Scrotum: a thin, wrinkled bag of skin in which the tests are contained. Unlike the ovaries, the testes are situated outside the abdominal cavity. The temperature inside the scrotum is about 2 degrees lower than the rest of the body, as this is necessary for sperm production.

Sperm ducts (vas deferens) are two in number, one on either side, that act as a passage-way for the sperms from the epididymis to the sperm sac, behind the bladder. In the sterilisation procedure, called "vasectomy", it is the sperm ducts that are cut and tied to prevent the sperms from leaving the testis.

Sperm sacs (seminal vesicles): two in number, lie at the base of the bladder. These are meant for sperm storage and also contribute a little towards the liquid portion of the semen.

Ejaculatory ducts: are formed by the sperm ducts on either side, joining the narrow ducts of the sperm sacs at an acute angle; they pass through the prostate and open into the urethra.

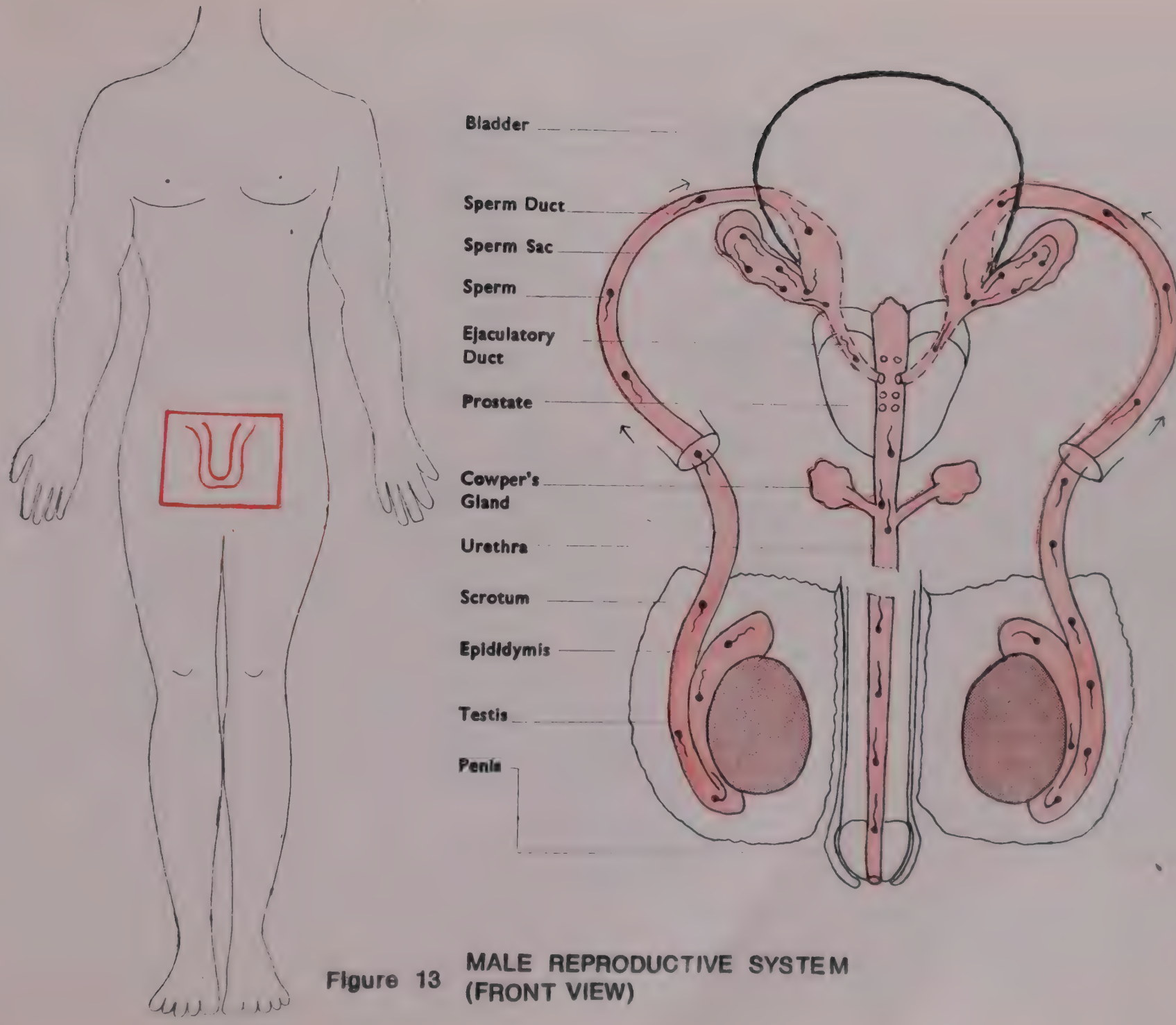

Figure 13 MALE REPRODUCTIVE SYSTEM (FRONT VIEW)

MALE REPRODUCTIVE SYSTEM (SIDE VIEW)

The remaining parts of the male reproductive system will be described here (see Fig 14) :–

Penis: is a cylinderical organ (3–4 inches in length in the adult male) composed mainly of erectile (spongy) tissue called "cavernous bodies" (seen in red in the figure). It is covered by loose skin that is continuous with the scrotum; the part that covers its tip is called the **prepuce** or fore-skin. Through the penis, at the bottom, runs the urinary passage called the **urethra**.

The penis has two functions: to convey urine from the bladder to the exterior and to deposit the semen in the vagina during the marital act. For both these functions the urethra acts as a common passage; however, these two functions do not mix. When ejaculation is taking place, a circular muscle at the base of the bladder tightens and prevents the sperms from mixing with the urine. Under sexual excitement, the erectile tissues of the penis get filled with blood, and it then becomes firm and increases in length; a condition called erection that is necessary to perform the marital act. Physiologically the latter is defined as the penetration of the vagina by the penis and deposition of semen there.

Semen: is the male reproductive fluid; its liquid portion is derived mainly from the prostate gland and a little from the sperm sacs and sperm ducts. The solid part consists of the sperms.

Cowper's glands: lie one on either side of the urethra below the prostate. Each is globular in shape and about 1 cm. in diameter; its duct opens into the urethra. These glands (the equivalent of Bartholin's glands in the female), under sexual excitation secrete an alkaline fluid meant to lubricate and neutralize the acidity of the urethra for safe passage of the sperms. This fluid at times contains a few sperms; thus the wife may get pregnant by penetration even if the husband does not ejaculate.

Ejaculation: At the end of the marital act the muscular contractions of the sperm sacs, prostate gland and sperm ducts expel the sperms into the vagina through the penis. At each ejaculation about 3–5 c.c. of semen are deposited which contain 100 million sperms per c.c. The sperms find their way rapidly into the cervix and many remain in the cervical crypts; it has been found that sperms can be detected in the cervical canal within 90–180 seconds after being ejaculated into the vagina. However they take much more time (about an hour) to reach the outer end of the uterine tubes.

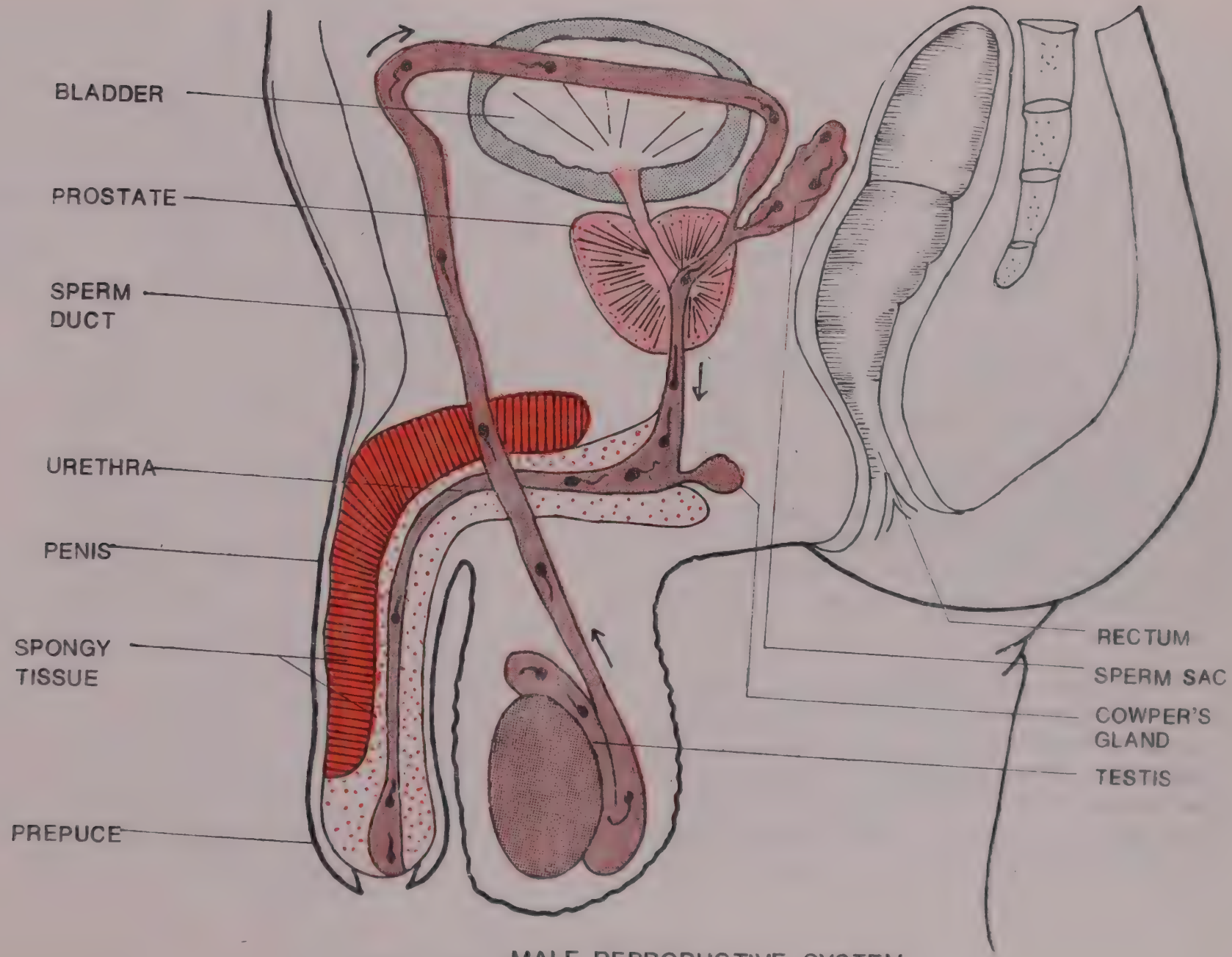

Figure 14 MALE REPRODUCTIVE SYSTEM (SIDE VIEW)

INTERNAL STRUCTURE OF THE TESTIS

Each testis is divided into about 250 conical compartments or lobes which vary in size. Each lobe contains from 1 to 3 seminiferous (i.e. sperm producing) tubules that are tightly coiled. When uncoiled each measures 70–80 centimetres in length. In these tubules (about a 1000 in number) sperm production takes place, which from puberty onwards is a continuous process in man. Most of the tubules are looped in such a way that both their ends join a series of short collecting tubules, at the apex of the lobe. These straight tubules open into an inter-communicating net-work of spaces, called the **rete testis** as shown in Fig. 15. From the rete testis a series of ductules about 5 cms. long move away from the testis and become increasingly convoluted and in doing so form the lobules of the **epididymis.** Here the sperms remain for some time where they mature with respect to both fertilising power and motility.

At the lower end of the testis the sperms are transported through the epididymis into the sperm. The latter passes into the abdominal cavity and serves not only as a passage for the sperms on their way to the sperm sac, but also as a storage place for them, particularly at the upper end where it broadens as it joins the sperm sac.

The **sperms** are the male sex cells; they are very tiny in size and visible only through a microscope. Each sperm possesses a head (which contains the chromosomes), a middle section (the "neck") that supplies the energy, and a tail that gives it motility. Mature sperms have little motility until they mix with the prostatic fluid to form the semen, shown in the inset to the right.

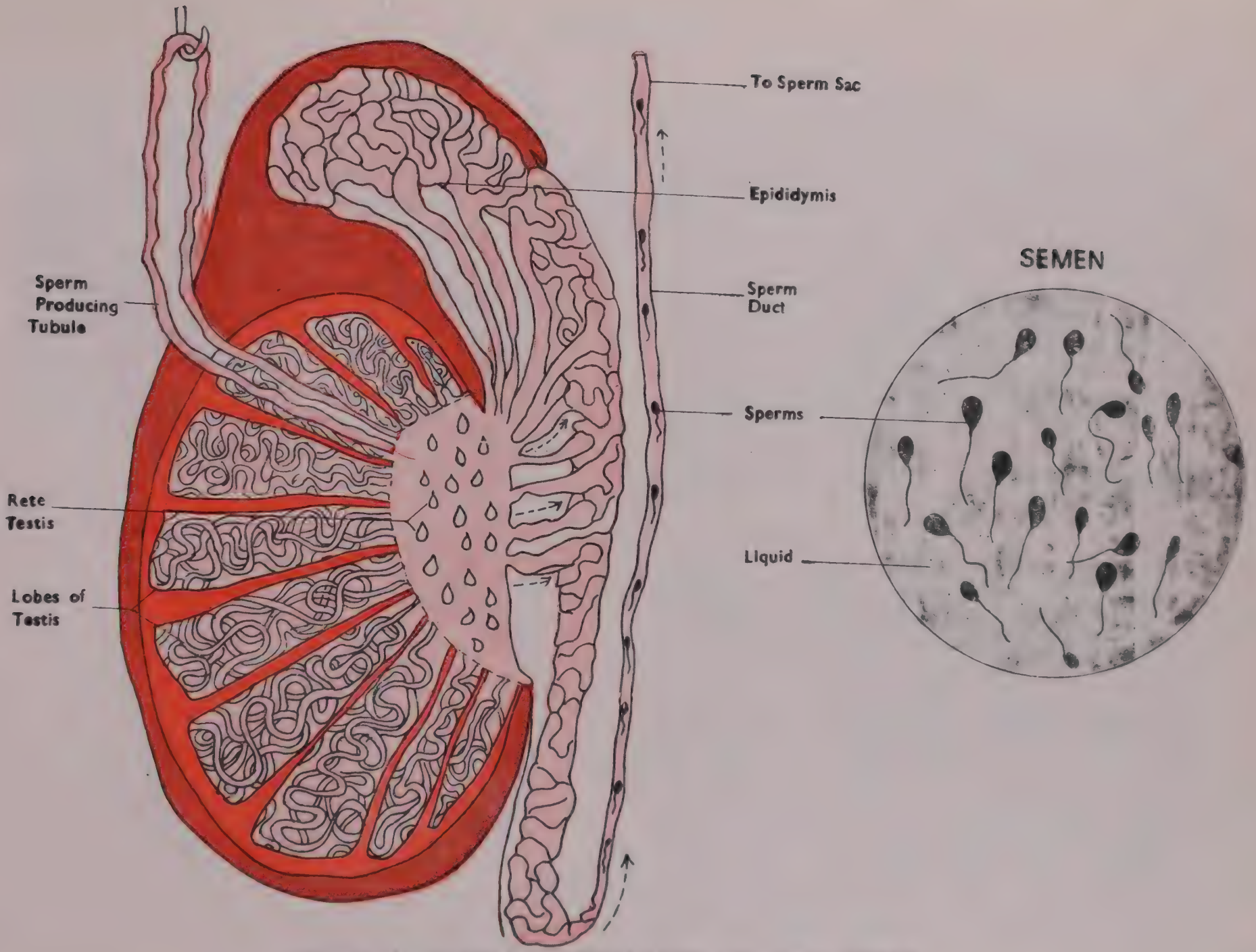

Figure 15 INTERNAL STRUCTURE OF THE TESTIS

Fig. 16 shows the first moment of conception, when the sperm unites with the ovum. This union is called **fertilisation**. During each marital act about 300 to 500 million sperms are deposited in the vagina; many die there due to its acidic environment. However, the presence of the thin, clear, slippery mucus from the cervix (seen in the figure) which is alkaline, helps the sperms to survive; it is present around the time of ovulation. Most of the sperms on their way through the uterine cavity enter into the cervical crypts and remain there for some time, bathed in this mucus, before passing on into the tubes. This mucus gives the sperms the energy to travel the long distance to the tubes and to give them the capacity to penetrate the ovum.

It is now known that less than a hundred succeed in reaching the outer portion of the tube where the ovum lies waiting; only a few succeed in pushing through the cluster of cells that surround the ovum, and finally only one will succeed in penetrating it. The sperms cover the distance (7 inches) from the vagina to the tube in about an hour. In Fig. 16, one sperm is shown having penetrated the outer wall of the ovum at the 12 o'clock position. Its head then separates from its middle piece and tail; these remain stuck in the wall and are destroyed. When the nucleus of the sperm joins with the nucleus of the ovum fertilisation is said to occur. A single cell results and a new life has begun, from which a new individual will develop.

At this moment all the hereditary characters, physical and psychological of the new baby are largely decided upon. For example, whether it will be male or female, short or tall, fat or thin; its features, the colour of its eyes, its temperament, intellectual qualities etc. etc. Half the factors (genes) that control these traits come from the father and a complementary half-set come from the mother. This cell is called the *zygote* (a greek word which means "yoked together"). Once fertilisation takes place the outer wall of the ovum hardens preventing the other sperms from entering it; these ultimately die out.

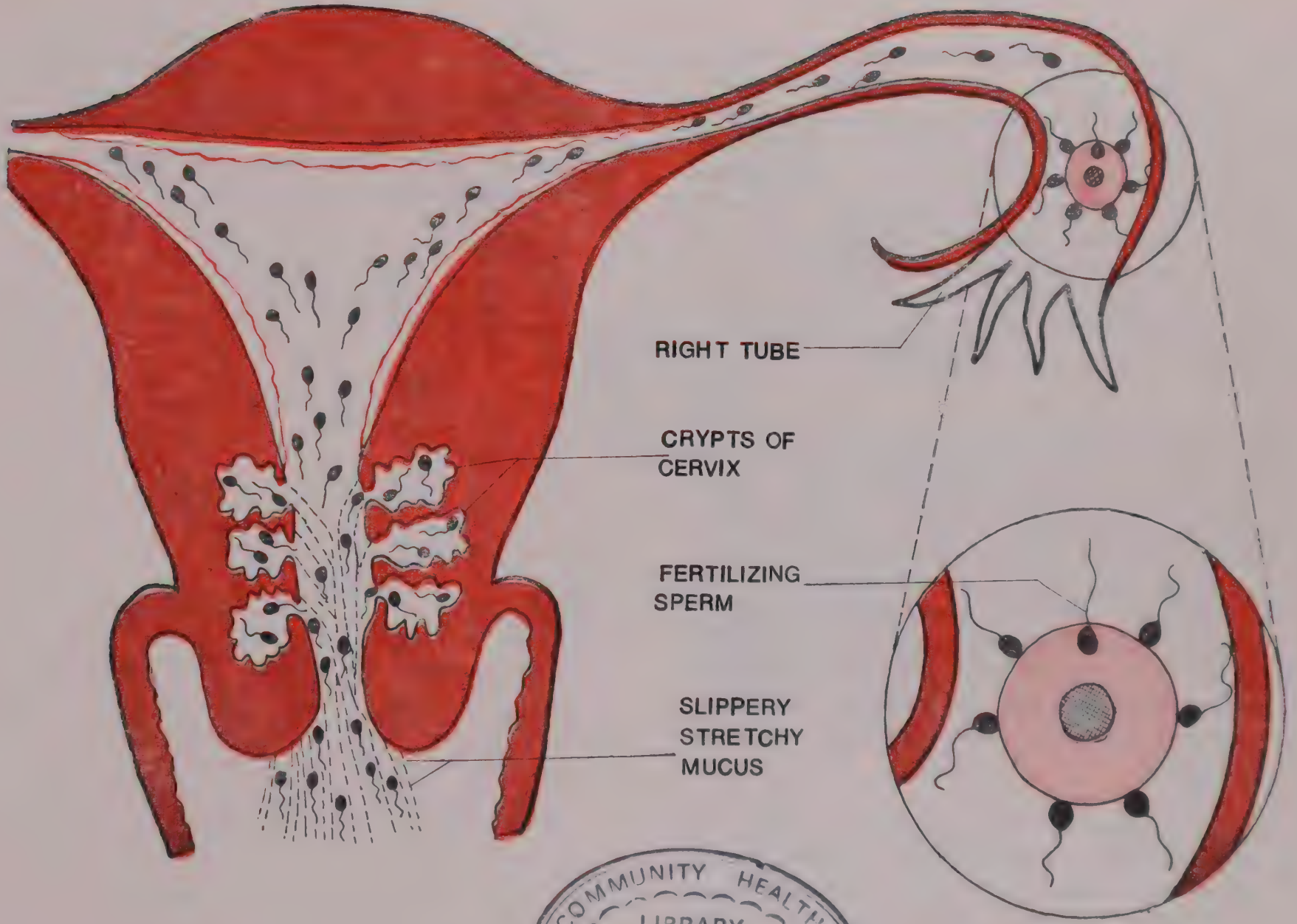

Figure 16 FERTILIZATION

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TWO TYPES OF SPERMS

Every cell of the human body has 46 chromosomes, which are rod-shaped bodies contained in the nucleus and are made up of minute particles called *genes*, that transmit the hereditary qualities of the parents to the child. The chromosomes are arranged in 23 pairs; one of these pairs are mainly concerned with sex, and are called sex chromosomes. In the female the two sex chromosomes are similar–XX. In the male they are dissimilar — XY; the Y-chromosome being of a much smaller size than the X.

Each sex cell (sperm and ovum), has half the number of chromosomes as compared to the other cells of the body, i.e. 23, of which one is the sex chromosome. Thus a mature ovum besides the 22 similar chromosomes (called autosomes) has one, X sex chromosome. The mature sperms, however carry either an X or Y sex chromosome and therefore of *two types*. In Fig. 17 these "X-sperms" and "Y-sperms" are shown diagramatically, surrounding an ovum, which, as just said, always carries an X sex chromosome.

Dr. L. Shettles (an acknowledged authority on human fertility) claims that the X-sperm has a bigger, oval head and a short tail; while the Y-sperm has a smaller, round head and a long tail. Both types die within a few minutes to several hours when exposed to an acidic environment as found in the vagina; but the X-sperms are found to be, relatively speaking, more resistant to it than the Y-sperms and survive longer than the latter. Both types thrive in an alkaline medium supplied by the thin, clear and slippery type of mucus secreted by the cervix.

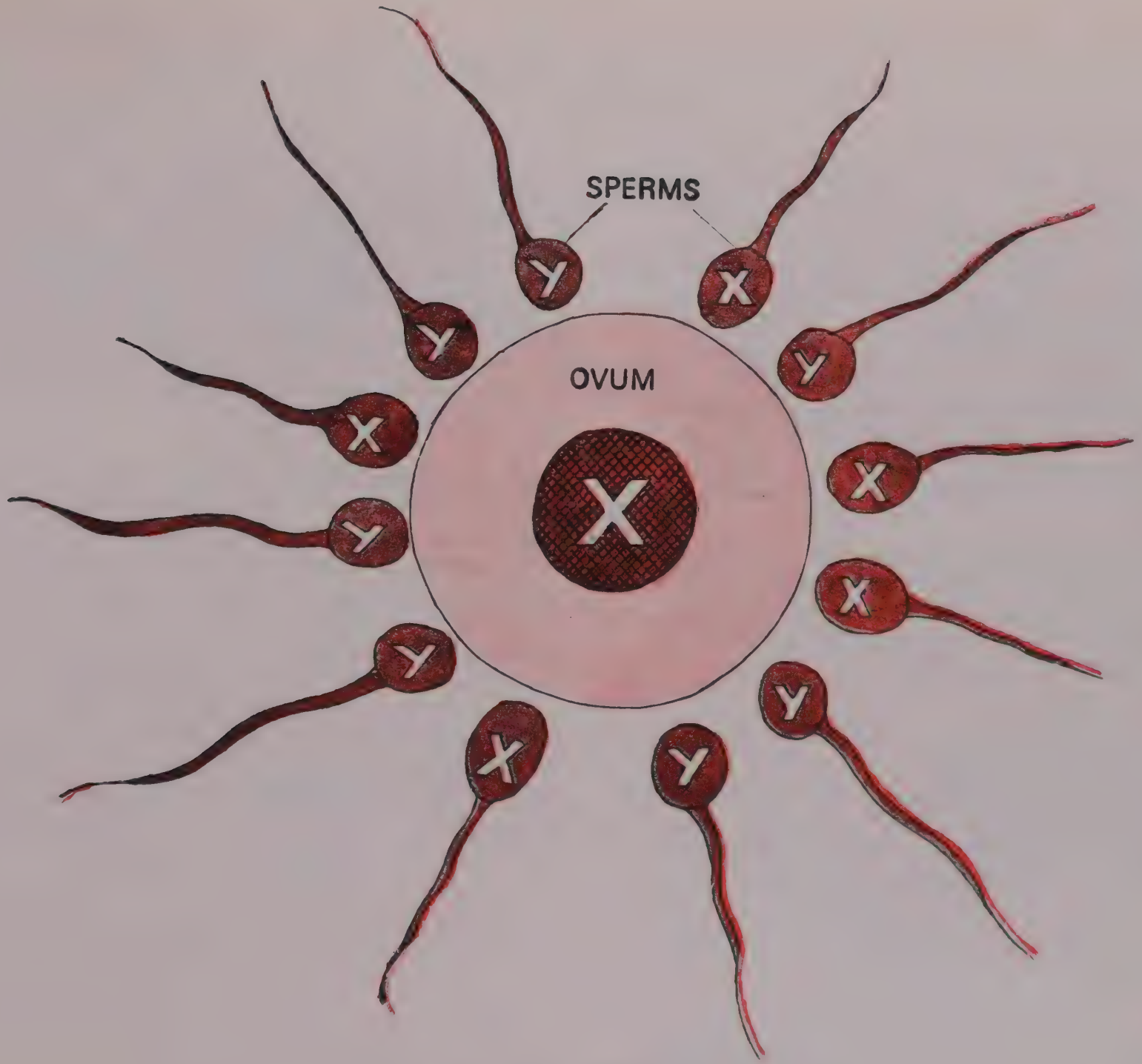


Figure 17 TWO TYPES OF SPERMS

WHAT DETERMINES THE SEX OF THE CHILD

The sex of a person is primarily determined at the moment the ovum is fertilised, by the type of sex chromosome supplied by the *sperm*. The upper part in Fig. 18 shows an "X-sperm" about to fertilise an ovum. This XX combination will result in a female zygote and thus a female child will be born. While in the lower part of the figure, a sperm carrying the Y sex chromosome is shown uniting with the ovum. With an XY union the outcome is a male zygote that will result in the birth of a male child. This means that it is the father that determines the sex of the child.

According to the work of Dr. L. Shettles the timing of the marital act in relation to the quality of the mucus secreted by the cervix (see Fig. 25) is a crucial factor in determining whether a male or a female child will be conceived.

A word about this mucus : the cervical mucus *at the start* is thick and opaque and so, to a large extent it blocks sperm migration into the uterus. But soon it becomes thin and clear; this clear type of mucus is called "more fertile"-type mucus because the sperms can easily pass through it and enter the womb and secondly it gives them the energy to travel the long distance to the tubes and the capacity to fertilise the ovum.

Now we can give Dr. Shettles' explanation as to how the timing of intercourse in relation to the quality of the mucus determines the sex of the child.

At the time closest to ovulation as possible, the quality of the mucus is optimum (fully alkaline etc.) for sperm survival of both the X and Y type of sperms; but the latter being lighter, swifter and more numerous, they stand a better chance of reaching the ovum *before* the X-sperms. So there is a better chance of getting a male child when the marital act is had closest to ovulation-day i.e. on the last day of the more fertile mucus and one day later.

When the fertile mucus just begins, it is not fully alkaline; consequently if the marital act is had at this time, (at the transition period of a change in its quality from opaque to cloudy or clear; and from thick to thin) more of the X-sperms than the Y-type will survive, as they are, relatively speaking, more resistant to the acidic environment in the vagina than the latter. Hence these stand a better chance of reaching the ovum *before* the Y-sperms and so there is a greater chance of a female child being conceived. The results, though still in the experimental stage, are encouraging.

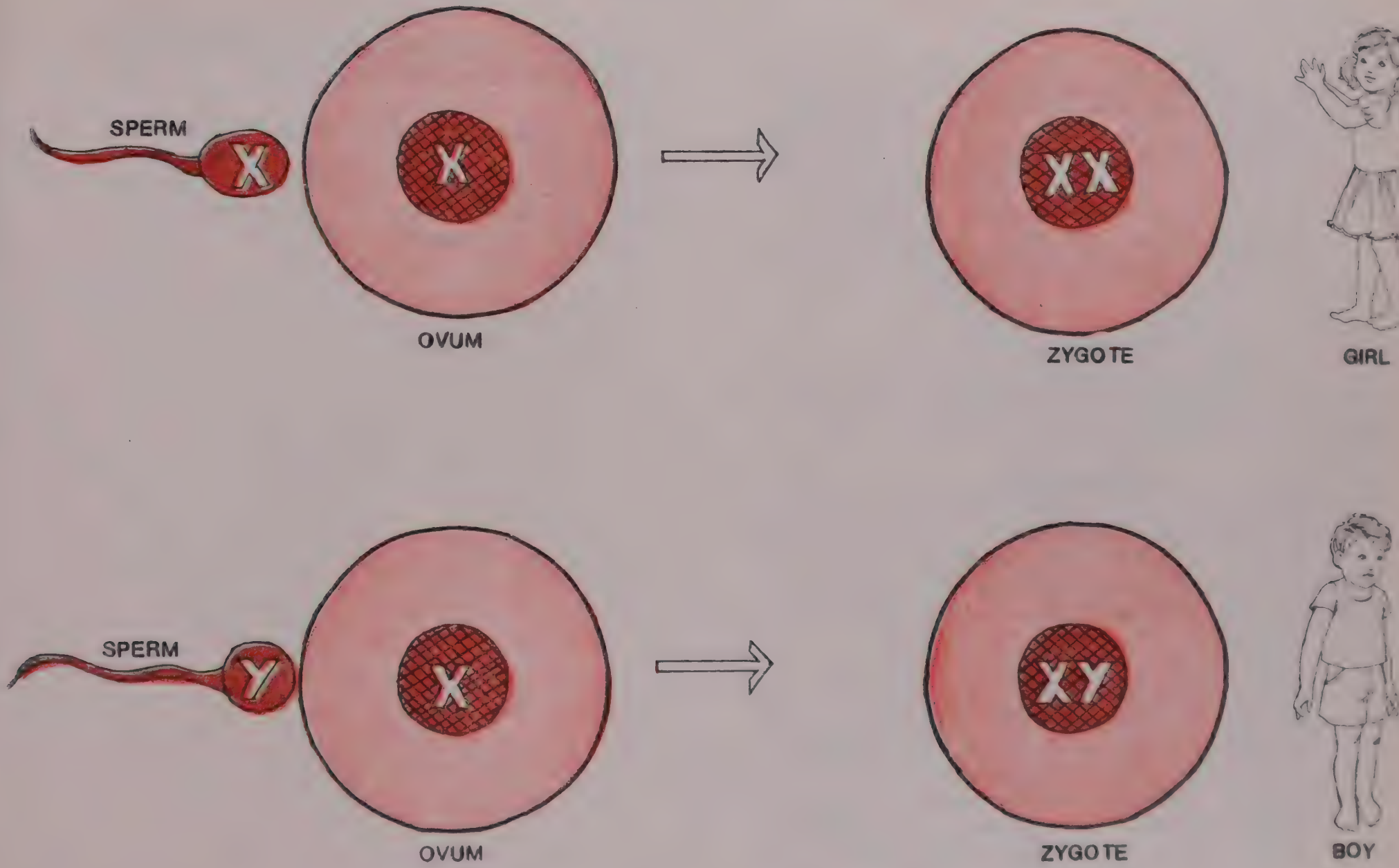


Figure 18 WHAT DETERMINES THE SEX OF THE CHILD

Figure 19 shows some of the stages (A to G) of development of human life in the first week of its existence. After fertilisation occurs (*Stage A*) the zygote divides, in 30 hours time, into two cells (*Stage B*); these two, after 2 days become 4 cells (*Stage C*), then into 8 cells (*Stage D*) and so on. By about the third day the zygote is a solid mass of closely packed cells (*Stage E*), about hundred in number, called the "morula" (from the Latin for "mulberry').

While the cells increase in number the outer dimensions of the zygote remain the same. These changes take place during the three days while they are propelled slowly through the tube.

Fluid enters the zygote due to which a cavity is formed splitting the morula cells into two parts; an outer layer of cells, and a clump of cells at one side (*Stage F*). This structure is called a 'blastocyst.' The outer cells will become the placenta, while the inner cell mass will form the embryo.

By the fourth day it enters the uterus. By the seventh or eighth day the outer wall of the blastocyst breaks down and it gets attached to the spongy nourishing lining of the womb that was prepared for it by the action of oestrogen & progesterone. This process of attachment is called *nidation or implantation* (*Stage G*). By the ninth day after fertilisation the blastocyst has burrowed deep into the lining and has the size of a pin-head. Four days later (at the time of the expected menstruation) it has grown enough to be just visible to the naked eye.

Notice that the cervical canal is filled with a 'plug' of thick mucus that prevents any harmful substances or bacteria etc. entering the uterine cavity and disturbing the growth of the delicate human life that has just begun.

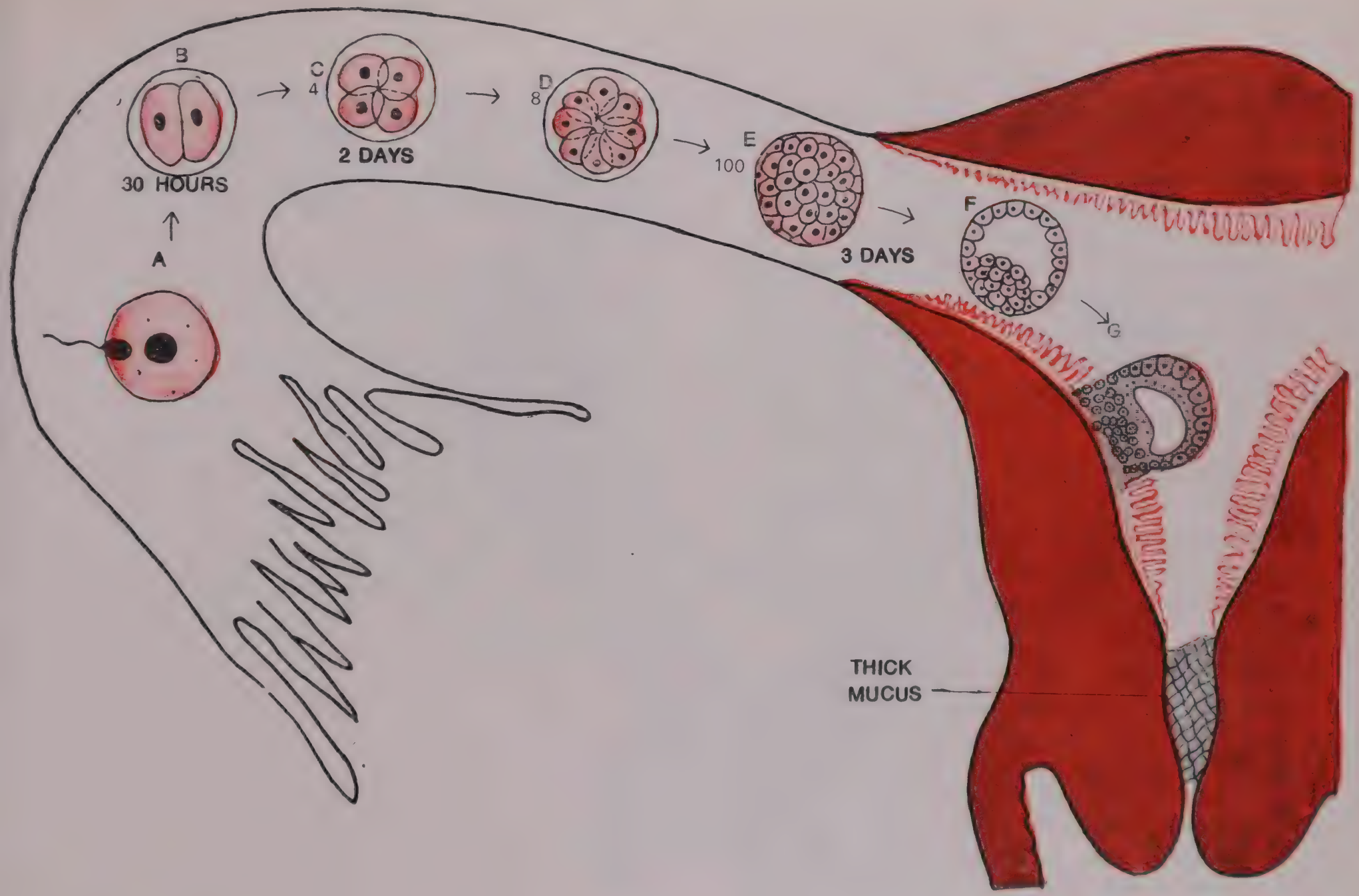


Figure 19 FERTILIZATION TO IMPLANTATION

From the eighth week the conceptus is no longer called "embryo" but "**foetus**" (latin for "young one") mainly because the first bone cells have appeared in the skeletal system and the beginning of bone formation is taken as the end of the embryonic stage. The external appearance is now clearly human : the eyes assume an oval shape and are covered with eyelids; the nostrils are dimly seen; the external ears are forming. The limb buds have become arms and legs; tiny fingers and toes are seen. The foetus is now 1½ inches in size, the head is large in comparison to the rest of the body as shown in Fig. 20. It floats in a bag (called amniotic sac) containing fluid that protects it from any sudden movement or external blow the mother may receive, by acting as a shock absorber.

Now, all the main body systems which were laid down at six and a half weeks have been completely formed : the stomach secretes digestive juices, the kidneys excrete a liquid though this does not as yet have the composition of urine; the heart beats sturdily. The brain begins to send out orders to coordinate the different activities of the body. What is interesting is that the tiny foetus can make gestures and movements which it will make after it is born e.g. the mouth makes sucking movements. Everything is now set for a growth in depth : the foetus will grow in size and there will be a complete formation of all its organs. Upto the 20th week, the uterus increases in size by two fingers' breadth, every two weeks.

The **placenta** (seen in the figure) is a complex organ that produces hormones (e.g. progesterone) and is the place where the foetus receives its nourishment and excretes its waste products. For this purpose the maternal and foetal circulations come into intimate contact in this organ, though they are distinct and never mix. The nutrients (sugar, vitamins, iron etc.) pass from the mother to the foetus and reach the latter through the umbilical vein (situated in the umbilical cord) while the waste products are brought to the placenta from the foetus by the umbilical arteries.

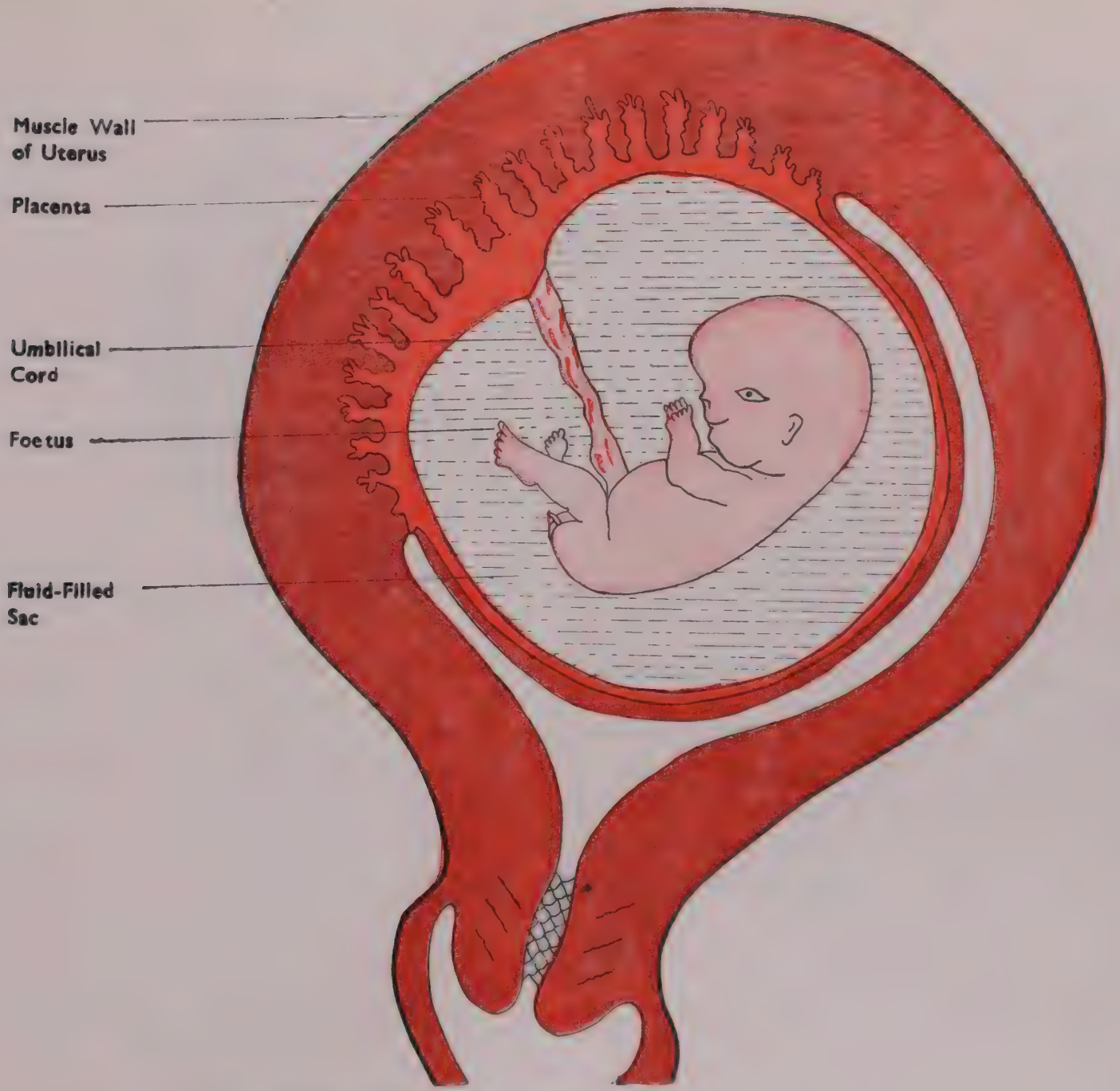


Figure 20 PREGNANCY AT THE END OF EIGHT WEEKS

PREGNANCY AT TERM (40 WEEKS)

This figure shows the foetus just before birth. The uterus has remarkably enlarged from a size of 3 inches in the non-pregnant state, to 10 inches at term. From the 20th week till the 40th week, it increases in size by one finger's breadth every two weeks.

The foetus is 50 cms. (20 inches) long and weighs about 7 pounds; its skin is covered with a greasy substance to protect it from the long immersion in the fluid contained in the amniotic sac. Its head is now proportionate to the body and is covered by hair. The eyes are open and have a slate colour; its permanent colour will develop later.

The child, because of its size almost fills the uterus; it changes its position often during its growth. But if it is the first child, the head gets fixed in the pelvis some days before the day of its birth, as shown in Fig. 21. The fluid in the wedge-shaped part of the amniotic sac lying in front of the child's head is called the "bag of waters."

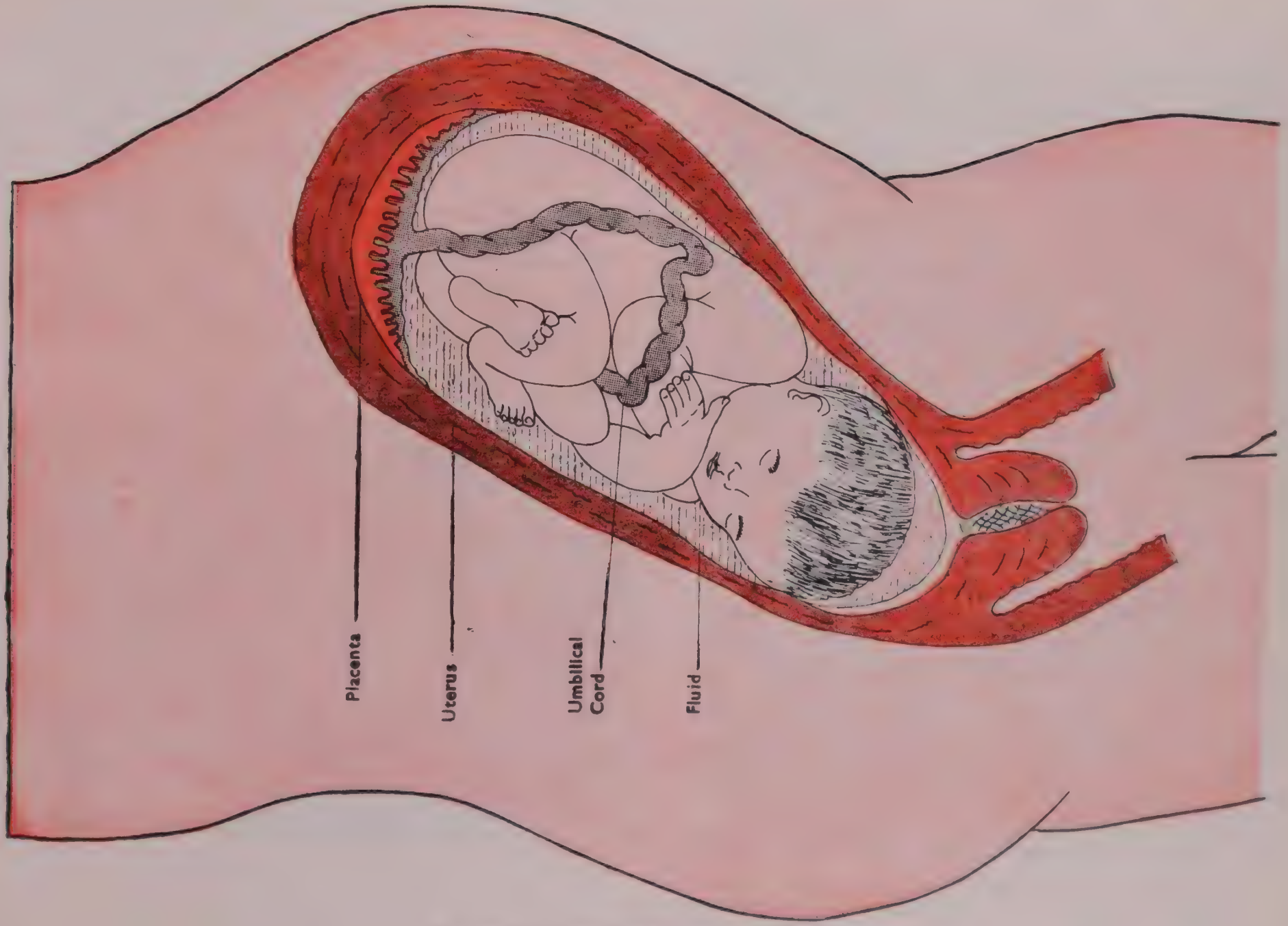


Figure 21 PREGNANCY AT TERM

STAGES OF CHILD BIRTH

Child birth is the expulsion of the foetus from the uterus. It is divided into three stages:–

The first stage : extends from the moment the uterine contractions begin, till the cervix is completely dilated. For reasons that are not known, at a specific point in time the uterine contractions begin. At first they come at intervals of 10 to 15 minutes, each lasting about 30 seconds; but with the passage of time they become more frequent, and stronger. These contractions exert a pull on the cervix; this pull causes it, firstly, to shorten until it no longer hangs down into the vagina but is drawn up completely ("cervical effacement"); secondly the pull opens the cervix and it widens slowly ("cervical dilatation"). During this stage the baby's head flexes more, tucking its chin in; its head progress into the pelvis. The "bag of waters" is still intact. The end of this stage is signalled by the uterine contractions becoming stronger and more frequent; the cervix continues to widen and the baby to be pushed deeper into the pelvis.

The end of this stage is reached when the cervix is fully dilated to 4 inches in breadth as shown in the upper diagram of Fig. 22. It usually lasts an average of 14 hours for the first child and 7 hours for subsequent babies. The bag of waters usually bursts at the very end of this stage. When the cervix is fully dilated the uterus and vagina together form a curved passage, along which the baby can pass.

The second stage : extends from the moment the cervix is fully dilated until the baby is born. It lasts a little more than two hours for the first baby, and about an hour for subsequent deliveries.

The uterine contractions become more powerful and much more frequent — about every 1 – 2 minutes. During these contractions the woman has to help in the expulsion of the baby by contracting her abdominal muscles. With these contractions the baby's head is pushed downwards, further into the birth canal. It retreats a bit when the contractions cease, but the advance continues until the head appears at the vulva; this is called "crowning of the head." With further contractions the head is born (lower diagram of Fig. 22) : the forehead, the eyes, the nose, the mouth and finally the chin appear successively. Soon, one shoulder and then the other are born and finally the rest of the baby's body is delivered. With this the second stage is complete. The umbilical cord is then tied and cut about three inches from the umbilicus of the baby.

The third stage : Expulsion of the placenta. This occurs after about a 15-minute interval. (This stage is not shown in the figure).

(For Fig. 22, see page 67)

Ivan and Carol Alva (married for 13 years) :-

"Two children in just the first 22 months of marriage made us hastily settle for the Pill; but our conscience was not at peace. It was then that we came to know about NFP. We found it truly reliable both to space *and* achieve conception. Our third baby was conceived by deliberately using it to achieve. Through the years NFP has given us a comfortable conviction that *we* are in command of our procreative power, without having to depend on any drug or device".

Ivan and Carol Alva

Annette & Arther Alvares

Annette and Arthur Alvares (newly wed) :-

"We learned about NFP at the "Engaged Encounter Week-end". After our marriage we decided to have our first child as soon as possible. So we used NFP to achieve conception, and to our delight God agreed - we succeeded almost immediately! We can hardly wait to see our first baby! NFP certainly helps to achieve!"

PERSONAL TESTIMONIES OF COUPLES USING NFP TO ACHIEVE CONCEPTION

Bernard and Sandra Fernandes

Bernard and Sandra Fernandes (newly wed) :-

"For the first year of our marriage we used NFP effectively to avoid conception. Its use has helped us to learn so much about our fertility! The abstinence (difficult at the start only) led us to discover so many ways other than the marital act, to express our love; and this to our surprise has deepened our relationship! We now plan to use NFP to have our first child. We've come to believe in NFP through a "live" experience of it. We recommend that couples learn about fertility awareness and NFP before marriage as we did".

Dawson and Joan Gomes :-

"We had to use NFP for some time to avoid conception. In charting our fertility we've come to appreciate the wonderful way in which our reproductive system works! Further, its use has drawn us closer to each other and has helped us grow in respect for human life. We find that it is an effective, moral and a safe means to space births. It is truly God's gift to us!"

Dawson and Joan Gomes

PERSONAL TESTIMONIES OF COUPLES USING NFP TO AVOID CONCEPTION

Dr. Merlyn & Eric Rasquinha and family

Dr. Merlyn and Eric Rasquinha :-

"After 3 children, we decided to limit our family size. Inspite of my cycles turning very irregular we are using the "Sympto – Thermal Method" with complete success. My husband's co-operation also helps, of course, in making NFP work. The previous worry of having an unplanned pregnancy (with the "rhythm method") has been replaced by a serenity and peace of mind for both of us!"

Joe and Celeste Cordo :-

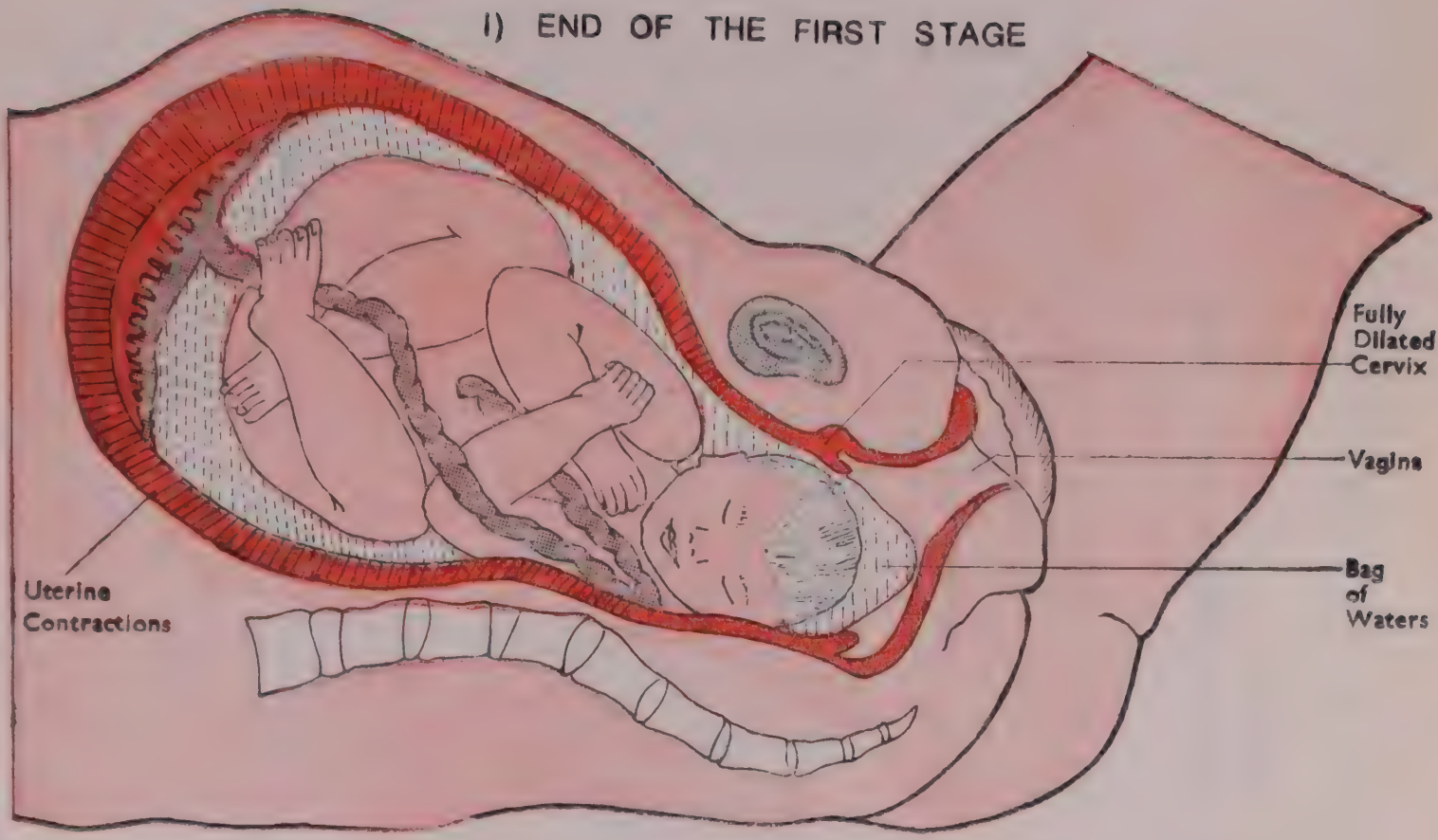
"We're happy with NFP because we find it offers more than an effective means to space births. Its use has helped us to make more time for each other; this is because interpreting the fertility signs, taking decisions etc., are all made *together*. All this has deepened our understanding of each other and has brought us closer."

Joe. Celeste Cordo and their daughter

PERSONAL TESTIMONIES OF COUPLES USING NFP TO AVOID CONCEPTION

THE NEVER-ENDING JOYS OF MOTHERHOOD !

Lily D'Souza gazes with joy and wonder at Mark, her first child !



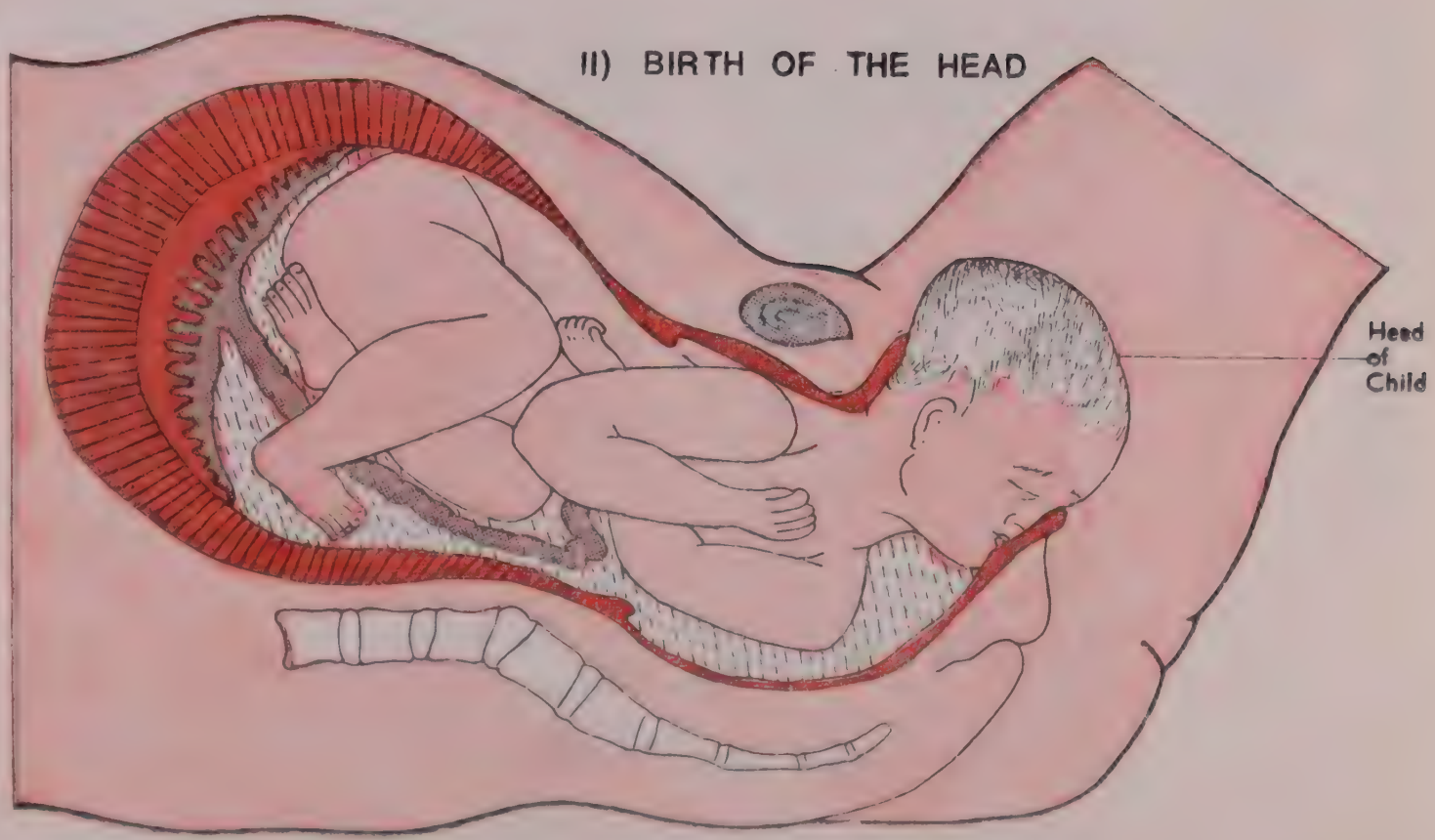


Figure 22 STAGES OF CHILD-BIRTH

PART II NATURAL FAMILY PLANNING

A) THE MUCUS METHOD

THE THREE ELEMENTS NEEDED FOR THE CONCEPTION OF A BABY

Before presenting the rules of the mucus method of natural family planning (whether it be in the avoidance or in the achievement of conception) some basic physiological information that has a direct bearing on this method, will be presented in the next few figures.

In Fig. 23, three essential elements needed for conception to take place have been diagrammatically represented; these are : a sperm from the husband; an ovum and a special type of cervical mucus from the wife.

The sperm : is always available as sperm production in the adult male is always taking place. The *exact* life-span of the sperm (in the genital tract of the woman) is not known. Most researchers claim that they live for 2–3 (and rarely 5) days in the presence of a special type of mucus, which is described below. What can be safely said is that without this type of mucus, sperms can live only for a few minutes to a few hours; but when it is present they live much longer.

The ovum : only one ovum usually is released in each menstrual cycle. Formerly the ovum was said to live upto 24 hours; however, recent research claims that its life-span is 12 – 18 hours. The *exact* survival time of the human ovum is not known.

The cervical mucus : research has shown that a special type of mucus secreted by the cervix is needed for the conception of a child. This mucus is thin (watery), clear, slippery and stretchy (like raw egg white) has been found to have the following functions :–

(i) *Helps sperm survival :* since it is alkaline, it prevents the sperms from being destroyed by the acidic environment of the vagina which is inimical to their survival.

(ii) *Helps sperm entry :* the fibrillar arrangement of this mucus is in thin parallel columns (that originate from each cervical crypt), allows for easy sperm migration through the cervical canal; many of the sperms enter into the crypts and remain there for some time before proceeding to the uterine tubes.

(iii) *Helps in sperm transport :* this mucus has special sugars that sustain the sperms in their long journey to the uterine tubes.

(iv) *Filtering factor :* Recent research strongly suggests that this type of mucus prevents defective sperms from entering the uterine cavity.

(v) *Capacitation factor* : Very probably it gives the sperms the capacity to penetrate and fertilise the ovum.

Thus we see how this type of mucus is essential for conception without which it would be very difficult, if not impossible for it to occur.

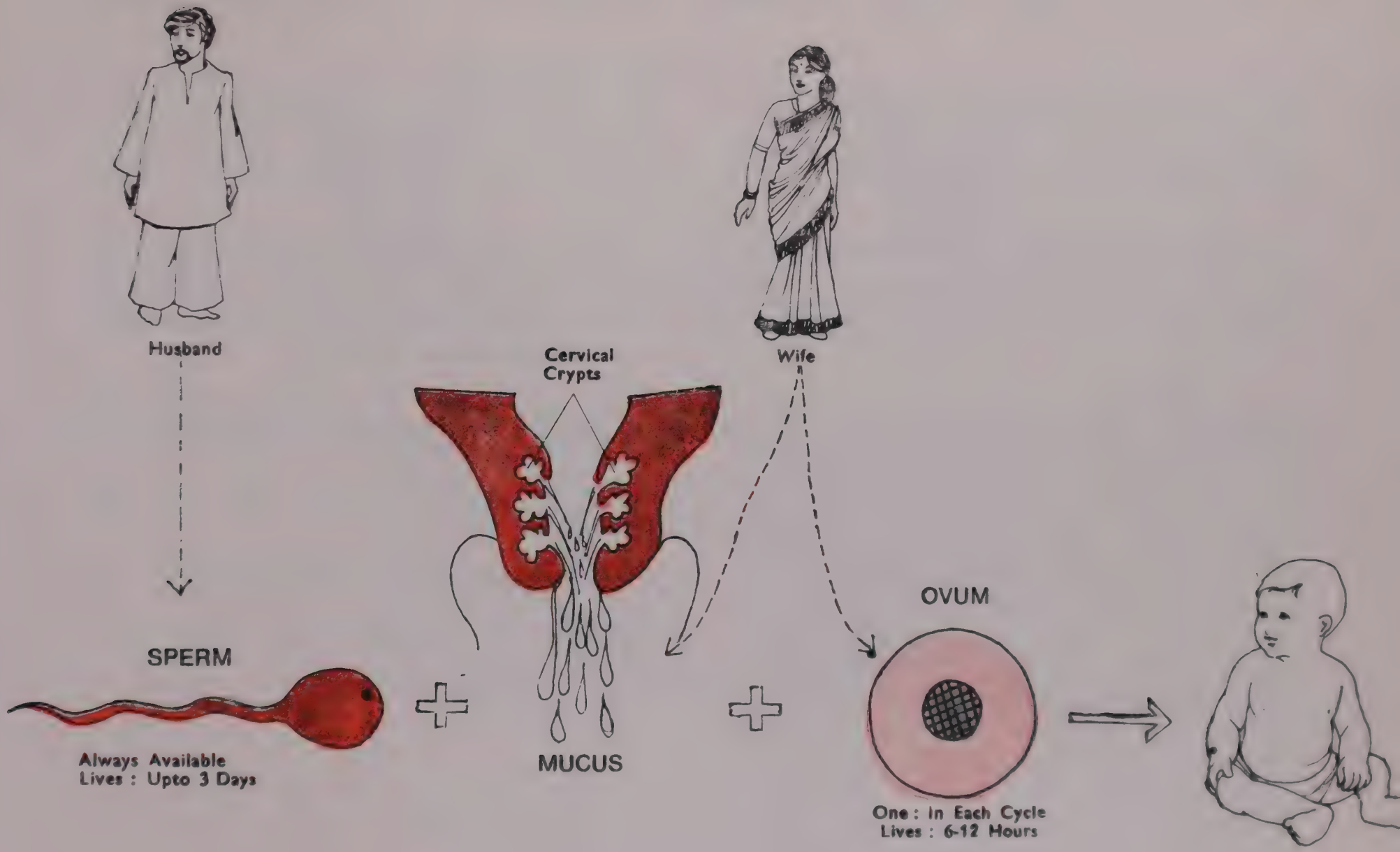


Figure 23 THE THREE ELEMENTS NEEDED FOR THE CONCEPTION OF A BABY

THE THREE NATURAL PHASES OF FERTILITY & INFERTILITY IN A MENSTRUAL CYCLE

The degree of fertility of a woman, for each day of her menstrual cycle is not the same. Fig. 24 Is meant to give a rough idea of the three different phases of fertility in a menstrual cycle.

The First Phase : is *infertile* and extends from the first day of the menses till the cervical mucus begins and is called the *pre-ovulatory infertile phase*.

The Second Phase : is *fertile*, and extends from the beginning of the mucus sequence and ends a few days after the mucus ceases. It is in this phase that ovulation occurs as shown. The figure of a baby in this phase is meant to show that a baby can be conceived in this phase only; and the days of this phase are called "fertile" or "baby" days. It must be emphasised that the degree of fertility of this phase increases progressively, because at the start of the mucus sequence the mucus is thick and sticky which prevents sperm-entry into the uterus to a very great extent; fertility is present, but it is very low. The fertility increases as the mucus becomes progressively more watery (thin), clear, slippery and stretchy. Maximum fertility is present when these features are seen to an optimum degree which is usually a day before the actual day of ovulation.

The Third Phase : is *infertile*, and extends from the end of the fertile phase until the last day of the cycle, before the next menstrual period begins. It is called the *post-ovulatory infertile phase*.

Thus, in a mentrual cycle, one sees a fertile phase occurring between two infertile phases. The *extent* of each of these phases will be described with greater precision later on.

Note : For the sake of convenience and brevity, henceforward, in the pages that follow, the :–

"Pre-ovulatory infertile phase" will be called **Phase1**.

"Fertile phase" will be called **Phase II.**

"Post-ovulatory infertile phase" will be called **Phase III**.

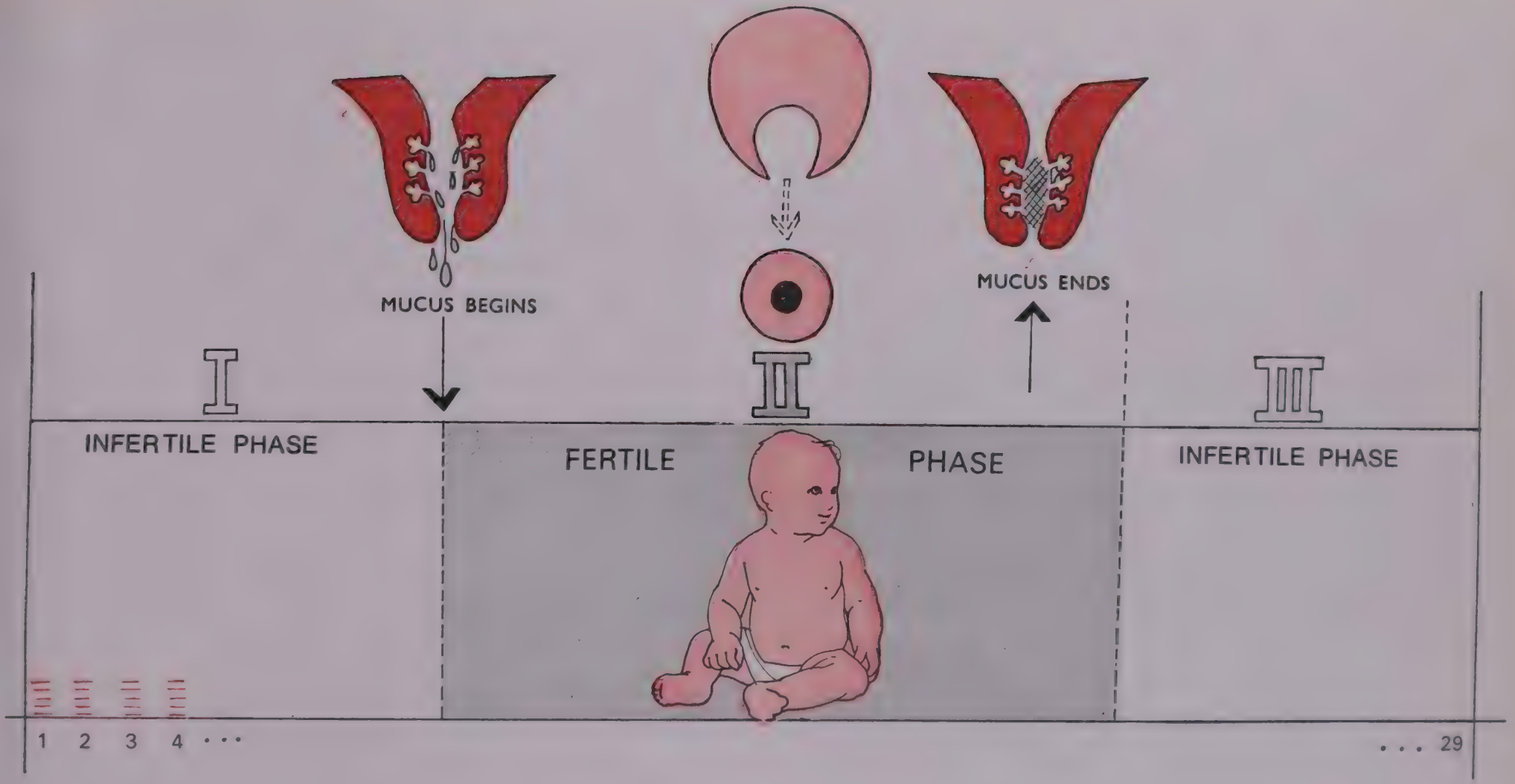


Figure 24 THE 3 NATURAL PHASES OF FERTILITY & INFERTILITY IN A MENSTRUAL CYCLE

MUCUS PATTERN IN AN AVERAGE MENSTRUAL CYCLE

Fig. 25 illustrates the unfolding of the mucus pattern in relation to the days of an average menstrual cycle. After the menstrual period (Days 1 – 4), there occurs a variable number of "dry" days during which there is not only no mucus but also a positive *sensation* of dryness at the vaginal orifice; often accompanied by a slight itchiness (Days 5 – 9). Research reveals that 6 days (on an average) before ovulation the mucus begins to flow from the cervix under oestrogen stimulation (Day 10). At the start it is *thick*, *opaque*, *sticky* and *non-stretchy*. Its fibrils form a mesh-work and so it prevents sperm migration into the womb *almost* completely; hence this type of mucus is called **less fertile** (Days 10 and 11).

As the oestrogen level rises further, the mucus becomes cloudy then *clear*, *watery*, *slippery* and *stretchy*. It produces a characteristic sensation of slipperiness and *wetness* (Days 12, 13 and 14 in Fig. 25). This mucus helps sperm survival etc. as mentioned earlier; besides, ovulation occurs very close to the last day (Peak) of this type of mucus, (usually 1 day after it). Hence it is called **more fertile mucus**. It must be remembered that if the mucus shows even *one* of the qualities given above it is to be taken as the more fertile type. The hand in Fig. 25 shows the stretchiness of this type of mucus. Rarely, it cannot be seen when its quantity is slight; but its presence can be *felt* by the typical lubricative (wet-slippery) sensation it produces. At times slight blood is present colouring the mucus red, pink, yellowish or brown. Rarely, the blood is copious in amount.

After ovulation because the oestrogen level drops and the progesterone level rises, the more fertile mucus becomes again thick, opaque and sticky for a day or two (Days 15 and 16) and the wet sensation disappears. (Rarely, immediately after Peak no thick mucus is seen and dryness begins). After this there is usually a continual run of dry days (Days 17 – 26) till the next menstrual period begins; occasionally a little thick mucus may be seen specially just before the next menses starts as shown on Day 27.

How and when to check for the mucus.

At *each* visit to the toilet see if mucus is present at the vaginal entrance, before and after urination. Check for its quality by *looking* at its appearance (opaque, cloudy or clear) and by *testing* it with the fingers to see if it is slippery or sticky, stretchy or not etc. Above all, note what type of *sensation* the mucus produces : stickiness, moistness, or wetness etc.; this of course, can be observed at any time of the day. This mucus-check takes only a few seconds : it is essential to do it whenever you visit the toilet.

Toilet tissue can also be used to collect a sample of mucus : wipe across the vaginal entrance with a tissue from front to back; if it is a dry day the tissue may catch or even tear; but if more fertile mucus is present, it slides easily. If mucus is seen on the tissue, check its quality as given above.

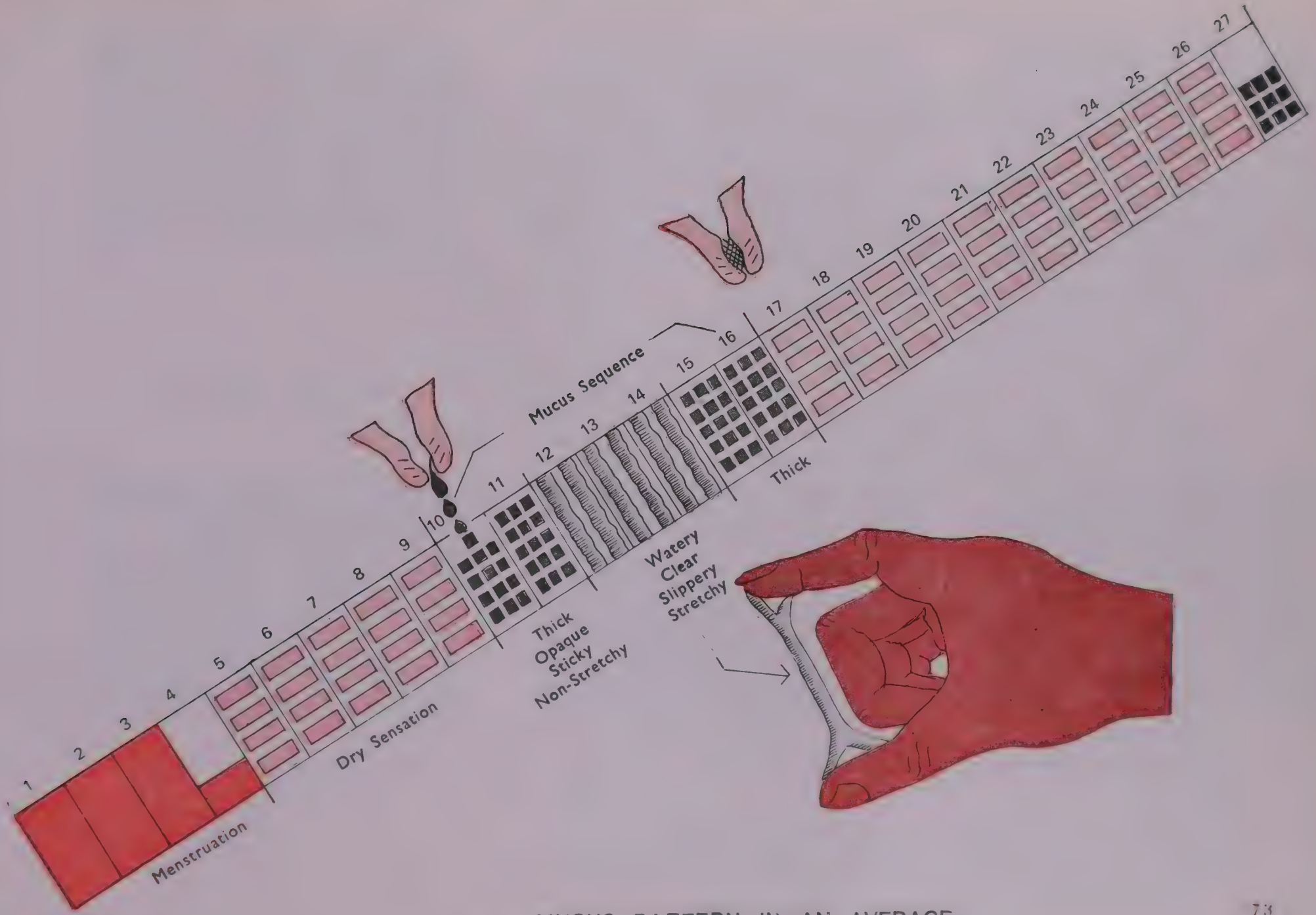


Figure 25 MUCUS PATTERN IN AN AVERAGE MENSTRUAL CYCLE

PHOTOS OF AN ACTUAL MUCUS SEQUENCE

In Fig. 26, six photos are presented of actual cervical mucus showing the important changes that occur in it under hormonal stimulation.

Picture 1 : shows the mucus (of the less fertile type) on the first day of its appearance which is scanty to begin with. The following qualities of this type of mucus can be seen : opaque, thick (or viscid) and pasty (i.e. not elastic). It feels sticky to the fingers and is not stretchable. It shows a white appearance (not shiny), though often it has a distinctly yellow tinge.

Picture 2 : This shows a larger amount of mucus which is still distinctly opaque and thick. The woman said the mucus still felt sticky to the fingers; she now felt a very slight moistness but no clear-cut wetness.

Picture 3 : shows a noticeable change towards the "more fertile" or "raw egg white" type of mucus. It has now become clear though not completely so; part of the mucus shows a certain amount of opacity hence the term "*cloudy*" has been used. What is important is that the woman stated that it felt thinner and slimy (or slippery) to the touch, and now the sensation produced by it was a definite "*wetness*" though this was slight.

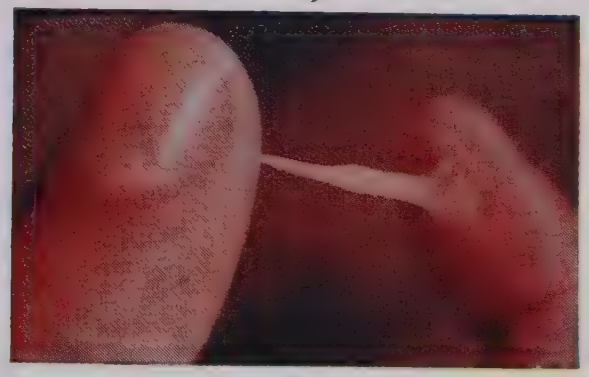
Picture 4 : The mucus now shows all the features of the more fertile type : completely clear, distinctly watery and slippery and the "wet" sensation increased as compared to the previous day.

Picture 5 : The clarity, slipperiness, wetness and stretchiness of this more fertile mucus are seen to a maximum degree; to a certain extent "shininess" a typical feature of this type of mucus is also seen. (The *last* day on which this raw egg white type of mucus is *seen* and/or *felt* is called **Peak-day**).

Picture 6 : With the fall of oestrogen and the rise of progesterone the mucus (from the day after Peak) goes back to the less fertile type and becomes opaque, thick and non-stretchy. It decreases in amount before disappearing completely. The woman noticed that the "wet" sensation had disappeared.

Rarely, from the day immediately after Peak, (instead of the usual thick, sticky mucus) dry days may begin, as mentioned earlier.

1) OPAQUE–WHITE
THICK
STICKY
NON-STRETCHY
SCANTY



2) OPAQUE–WHITE
THICK
STICKY
QUANTITY++

3) CLOUDY - CLEAR
THIN
SLIPPERY+
WETNESS+

4) CLEAR (like raw eggwhite)
WATERY
SLIPPERY++
WETNESS++

5) CLEAR
WATERY +++(98% water)
SLIPPERY +++
STRETCHY+++
WETNESS +++

6) OPAQUE - WHITE
THICK
STICKY
NON-STRETCHY
SCANTY

Figure 26 PHOTOS OF AN ACTUAL MUCUS SEQUENCE

SYMBOLS USED TO DEPICT THE EVENTS IN A MENSTRUAL CYCLE

Fig. 27 shows the colours and symbols that are chosen to depict the different natural events which occur in a menstrual cycle; there are also symbols to note when the marital act is had, and when it is not to be had. These colours and symbols help to make it easier for the reader to follow the text and will be used in subsequent diagrams. This figure is self-explanatory and requires no further elaboration.

POSITION OF THE MUCUS SEQUENCE IN CYCLES OF DIFFERENT LENGTH

Fig. 28 shows that the position of the mucus sequence in the cycle shifts when the length of the menstrual cycle changes.

In the first cycle which has a length of 32 days, the mucus sequence begins on Day 16. In the second cycle of 28 days, it begins on Day 10. In the third cycle of 25 days it begins on Day 7; and in the fourth cycle of 21 days only, it begins on Day 4, immediately after the menstrual period ends. In other words, glancing at these 4 cycles from above downwards, one can observe that the shorter the menstrual cycle, the earlier does the mucus sequence begin. This fact is worth keeping in mind by women who are using the mucus method whether in the avoidance or in the achievement of conception.

Another feature worth noting is that the time-interval between Peak (the last day of the more fertile mucus) and the first day of the next menstrual period is quite regular in the length *irrespective* of the length of the mentrual cycle. This is approximately 14 days in normal healthy women in the reproductive age group; it varies between 12 and 16 days. Thus, whether the cycle length is of 32 days or it is of 25 days i.e. 7 days shorter, this time-interval is the same – 14 days. In cycles 2 and 4 this time-interval is 13 days just one day short of the usual 2 weeks but well within the normal range. This knowledge is of practical value in using the mucus method, as the woman once having identified the Peak mucus day correctly, can say with confidence on what day she can expect her next menstrual period to begin, which is certainly useful information.

The length of this time-interval depends on the life-span of the yellow body which is usually two weeks. In special situations, however as e.g. in the first few cycles after breast-feeding and in pre-menopausal women, the length of this post-ovulatory phase is much shorter than two weeks.

Figure 27 SYMBOLS USED IN CHARTING THE SIGNS AND SYMPTOMS

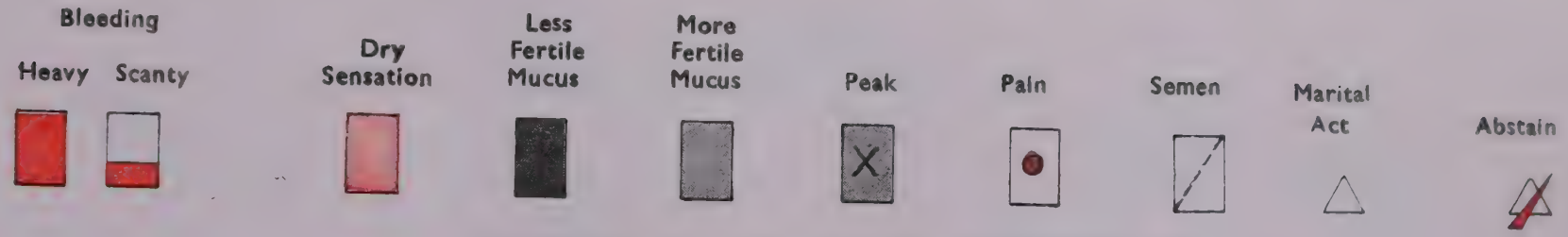
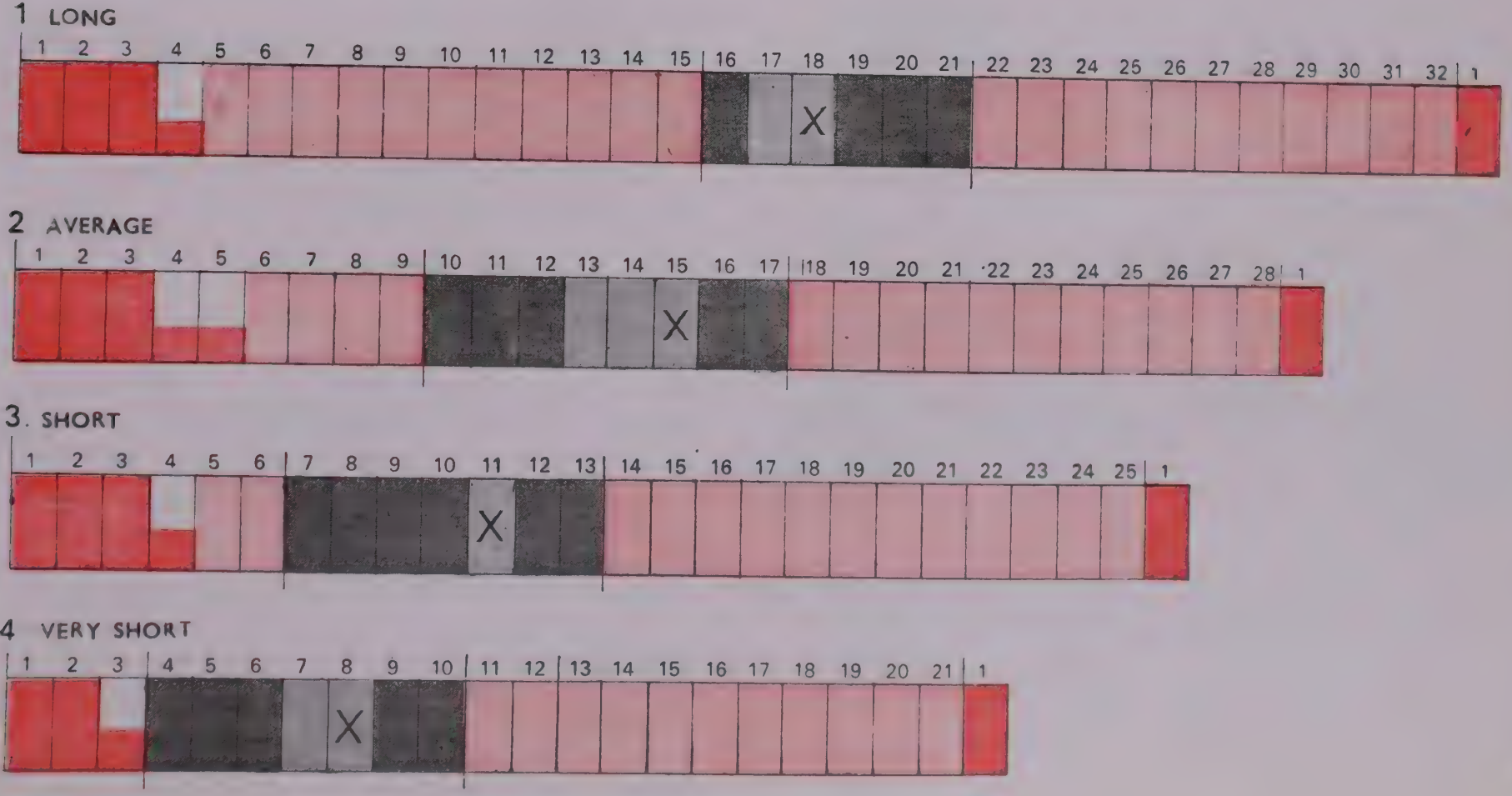


Figure 28 POSITION OF THE MUCUS SEQUENCE IN CYCLES OF DIFFERENT LENGTH



BASIC INFERTILE PATTERNS OF THE PRE-OVULATORY PHASE

In Fig. 24, it was shown that the menstrual cycle has two infertile phases : one, pre-ovulatory (i.e. before the mucus sequence) and the other after it, post-ovulatory. The rules for the avoidance of conception for these two phases differ radically and will be given separately.

The types of infertile patterns in the pre-ovulatory phase

Before giving the rules (for the avoidance of conception) for this phase, it is of practical importance to realise that there are three types of infertile patterns that occur in *this* phase; these are shown in Fig. 29.

1) Dry days

One type of pattern consists of a run of days during which the woman feels a positive sensation of dryness. These days are infertile since the mucus needed for sperm-survival is absent. Thus these "dry" days are taken as her **basic infertile pattern** (BIP); an apt term coined by Dr. J. Billings. This is a common type of BIP (Fig. 29, 1).

2) Daily, unchanging mucus

Many women experience in this phase, a *daily* uniform discharge of mucus which is usually thick, opaque and may be yellowish in colour. In women who are breast-feeding and in post-Pill users it may be watery or milky in quality. The most important feature is that its consistency, colour, amount etc. remain *unchanged* day after day. In this case, the BIP is classified as a "daily, unchanging mucus" as shown in Fig. 29, 2.

(*Note : for the sake of convenience and for certain technical reasons, the symbol for "less fertile mucus" is used to denote this type of BIP in fig. 29.2 and will be used in subsequent figures whenever it has to be illustrated*).

The Billings ("The Atlas of the Ovulation Method)" find that in many women in the pre-menopause, during breast-feeding and those who have come off the Pill, this continuous "mucus" is not from the cervix, but originates in the vagina. It consists of epithelial cells (shed by the vaginal wall) and while blood cells, and is due to a low level of oestrogen.

3) Dry days and mucus patches

The third type of BIP is a combination of the first two. It is usually seen in long cycles with a prolonged pre-ovulatory phase, viz. it shows patches of mucus interspersed with patches of dryness (Fig. 29, 3).

Thanks to the research of Billings the necessity to abstain for a prolonged period of time during the pre-ovulatory phase, (until the woman is virtually certain that ovulation has occurred), no longer exists. Once she has identified the BIP in her own case, the application of the appropriate rules in the avoidance of conception can be easily and successfully made. This is of great help particularly in menstrual cycles that have a very long pre-ovulatory phase.

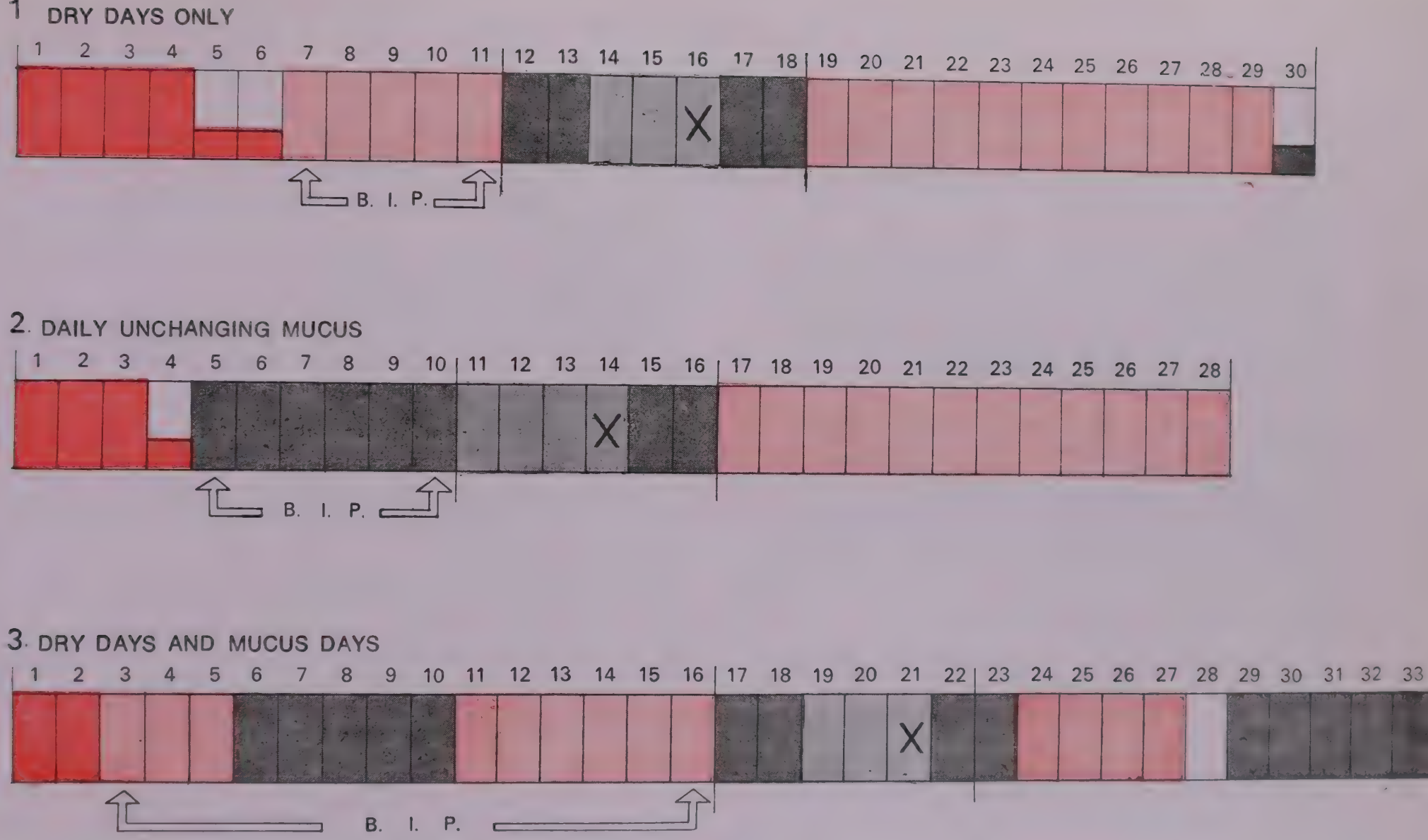


Figure 29 BASIC INFERTILE PATTERNS OF THE PRE-OVULATORY PHASE

RULES FOR THE PRE-OVULATORY PHASE

Note : i) Fig. 30 illustrates the rules that apply to the phase which extends from the start of the menses until the mucus begins. ii) The word "abstain" used below means the avoidance not only of the marital act but also of any genital contact.

Rules 1 : Abstain during the menstrual period

This is because in very short cycles the mucus *may* begin before the menses ends; and so, the menstrual blood may hide the presence of mucus.

Rule 2 : If the mucus begins before the menses ends

Abstain during the mucus-days and *also* for 3 days more, after the last day of more fertile mucus (Day 7 in cycle 2, Fig. 30.) Hence the "abstain" symbol is marked till Day 10.

Rule 3 : When the BIP is dry days

a) The marital act can be had, but on **alternate** days, and only at the *end* of the day, so that you can make sure during the course of the day that it was dry, and hence infertile. For example, Day 4 (cycle 3) being dry can be used; but abstain on the next day (Day 5) as shown. The reasons for this "alternate dry day rule" are :

On the day following the marital act, there is usually a drip of semen (from the seminal residue in the vagina) which can hide the presence of mucus which *may* have begun. Besides, at times, the semen itself appears clear and stretchy, like fertile mucus, and gives a wet sensation.

b) If the sequence of dry days is interrupted by even one day of mucus (Day 7), abstain on that day and also for the next 3 days. Thus, in cycle 3, abstinence is marked from Days 7 to 10.

Rule 4 : When the BIP is a daily, unchanging mucus

Alternate days may be used, at the end of the day. But if there is *any* change in the quality or quantity of the mucus, abstain on that day and also for the next 3 days; e.g. in cycle 4 there was a change to wetness on Day 8, hence the "abstain" symbol was marked from Day 8 to Day 11.

Rule 5 : During inter-menstrual bleeding

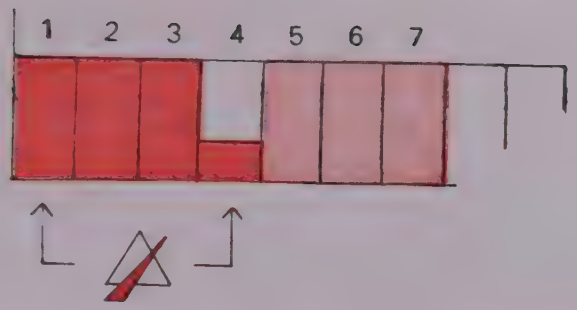
Bleeding can occur at ovulation-time and may hide the presence of mucus. Hence, abstain on these days of bleeding and also for the next 3 days, e.g. Days 9 to 13 in cycle 5.

N.B. i) Check for the presence of mucus not just once at night but *several* times a day, *whenever* you visit the toilet. The type of sensation that you feel can be checked at any time of the day as you go about your daily tasks. Should just one of these checks reveal the presence of even less fertile mucus that day is to be taken as a fertile day.

ii) How to use consecutive days

The semen (causing wetness) on the day after the marital act is had, can be eliminated in most cases by doing the "**Kegel exercise**" (KE). If after the KE you feel dry, sexual relations may be had at the end of that day. (Details about the KE are given in the appendix). However, beginners should keep to the alternate dry day rule.

1



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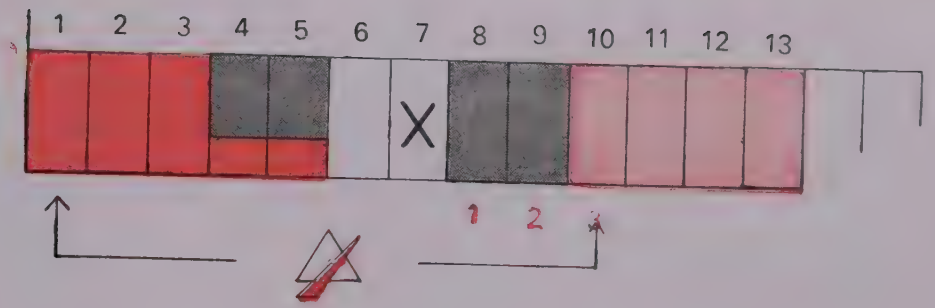
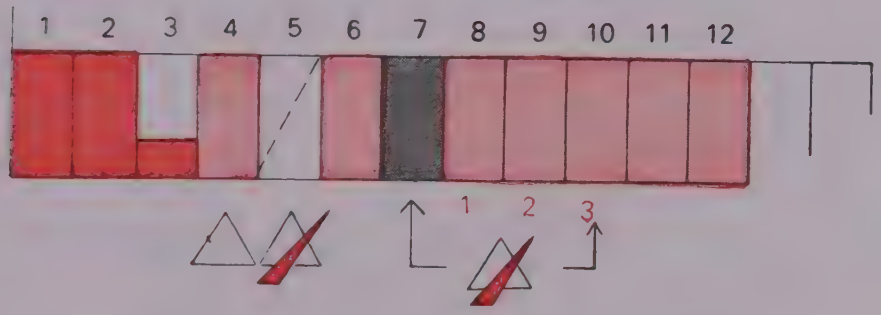
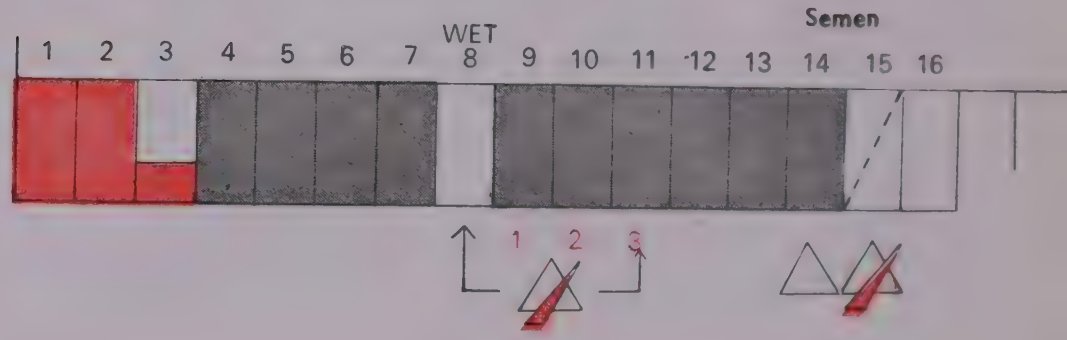


3 B.I.P. : DRY DAYS



4 B.I.P. : DAILY UNCHANGING MUCUS



5 INTER-MENSTRUAL BLEEDING

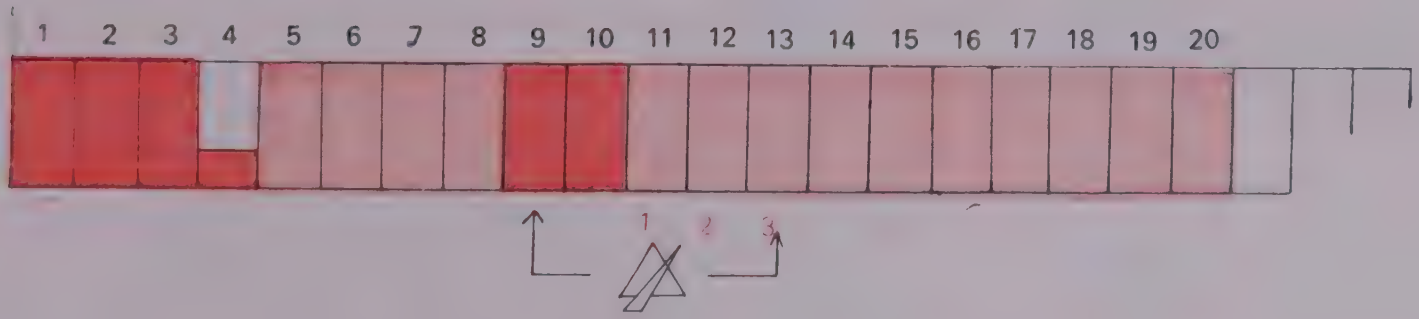


Figure 30 RULES FOR THE PRE-OVULATORY PHASE

DETERMINING THE FIRST DAY OF THE POST-OVULATORY INFERTILE PHASE (PEAK PLUS 4–DAY RULE)

Preliminary Note : Unlike the thick mucus the more fertile mucus being thin (low viscosity) produces a typical wet *sensation.* The *last* day on which this wetness is felt is called the **Peak mucus day** or just **Peak** as mentioned before. In judging which is the Peak-day *only the quality* (not the quantity) of the more fertile mucus enters into the picture. Very often the quantity of this type of mucus lessens *before* Peak is reached e.g. if in a cycle there is plenty of more fertile mucus for it to be clearly *visible* say, on Days 18 and 19, but Days 20 and 21 it lessens so much that now the woman experiences its presence only as a wetness on these days; and on Day 22 it disappears to be replaced by thick mucus. Then Day 21 is the Peak mucus day; thus Peak is determined in retrospect. It is important to determine the Peak correctly since the calculation for determining the first day of the post-ovulatory infertile phase (Phase III) is made from that day.

The Rule : Abstain from all genital contact on *all* mucus days and also on the *three* days immediately following Peak. In other words : from the *evening* of the **4th day after Peak** is the start of Phase III, and which extends till the last day of the cycle.

This is illustrated in Fig. 31, 1. The Peak occurred on Day 14 being the last day of the fertile mucus. The numbers "1, 2, 3" marked against the 3 days immediately after Peak denote abstinence according to the rule. Hence Day 18 is the 1st day of Phase III since it is the 4th day past peak; it extends till Day 28, the last day of the cycle. No conception can occur in this phase of the cycle because (i) ovulation usually occurs on the day following the Peak (P) or on P–day itself. (One study shows that : in 95.4% of cycles it occurred from P minus 2 to P plus 2 days; the overall range being P minus 3 to P plus 3 days). Hence by the 4th day after Peak, one can be sure that the ovum that left the ovary is dead; (ii) No further ovulation can occur as progesterone inhibits it till the end of the cycle. Hence Phase III is known as the "completely infertile part" (CIP) of the cycle.

In Fig. 31, 2 (an actual chart) the woman marked Day 16 correctly as the Peak. Thus the CIP begins 4 days later on Day 20 and extends till Day 30, the last day of the cycle. The couple used this phase thrice. Note, that the day following the one on which the marital act was had is marked as "wet." due to the seminal spill just to get the woman *habituated* to check daily for the sensation she feels and not because the couple had to abstain on this day. In other words the alternate day rule applies only to Phase I of the cycle.

Rule for the days of less fertile mucus

The less fertile mucus prevents sperm entry into the womb to a great extent. However using the days of this type of mucus does carry a *low* pregnancy rate. Hence, whether to use these days or not will depend on the degree of protection or "safety" desired by the couple. If pregnancy would not cause them serious inconvenience these days of less fertile (thick) mucus may be used. Learners of the method should not use them until they gain experience to correctly judge the changes in the mucus.

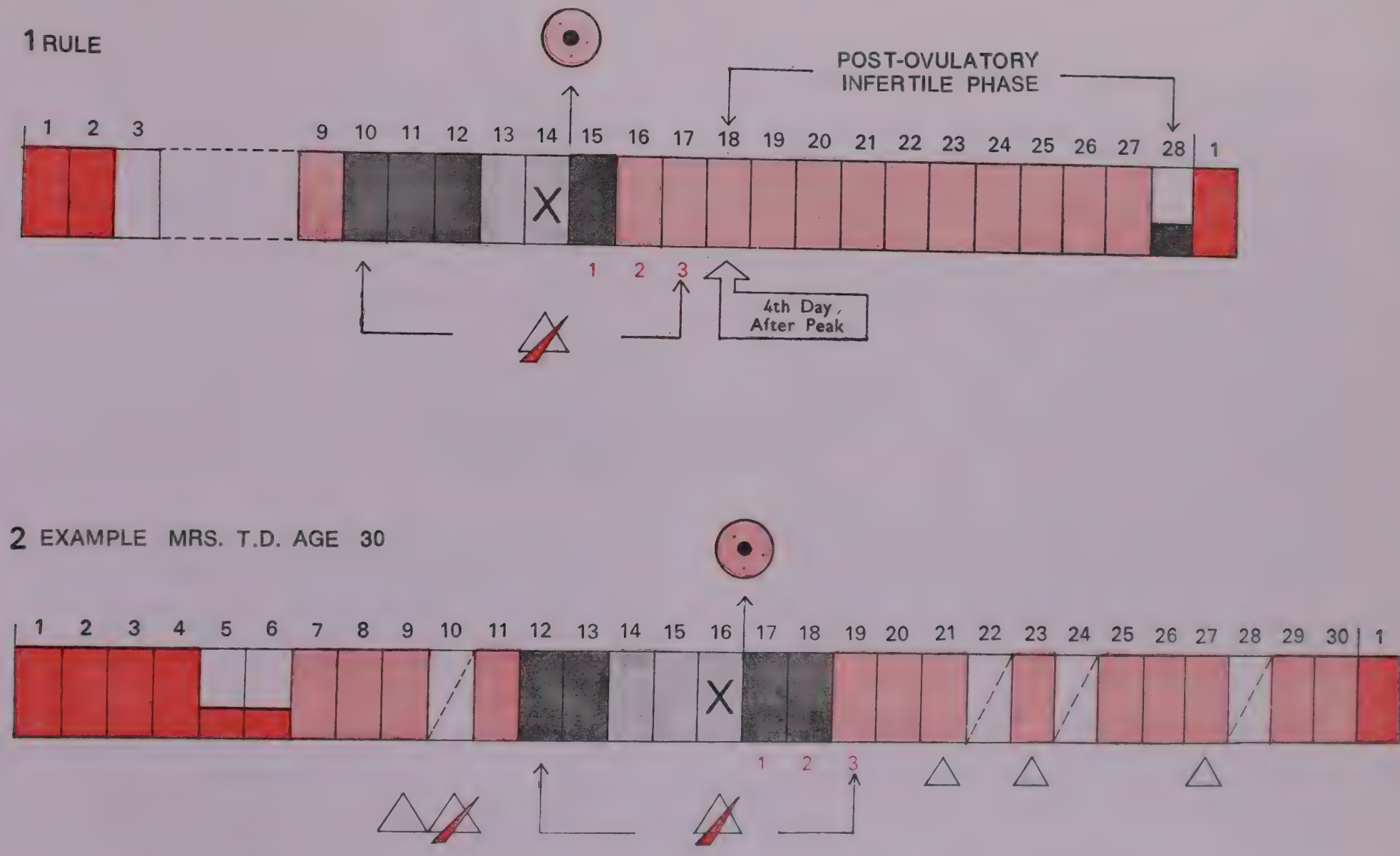


Figure 31 DETERMINING THE FIRST DAY OF THE POST-OVULATORY INFERTILE PHASE

Fig. 32 shows examples of actual charts of women using the mucus method :

1) In the avoidance of conception : Under 1) a short and a long cycle are shown. In both, the couple correctly used the alternate dry day rule in Phase I. The mucus began much earlier in the short cycle (Day 10) as compared to the long cycle (Day 16). The Peak was correctly marked on Days 12 & 18 respectively. Though the two cycles differ markedly (by 7 days) in length, the interval between Peak and the next period is almost the same in both, viz. an average of 14 days. The reason for this has been mentioned earlier.

2) In achieving a pregnancy : NFP is unique in the fact that it helps a couple to identify the days of maximum fertility viz. the days of fertile mucus upto the first temperature-rise; the days when the cervix is soft, high, open and wet (S.H.O.W.) to a maximum; and the day of intermenstrual pain ("Mittelschmerz").

Fig. 32, 2) shows actual charts of women who used NFP to *achieve* conception. In example A : fertile mucus was experienced only on one day (Day 16) which is unusual; yet using this day was successful in achieving pregnancy. In example B : the mucus began early on Day 6. The marital act had around Peak (Day 12) resulted in a pregnancy.

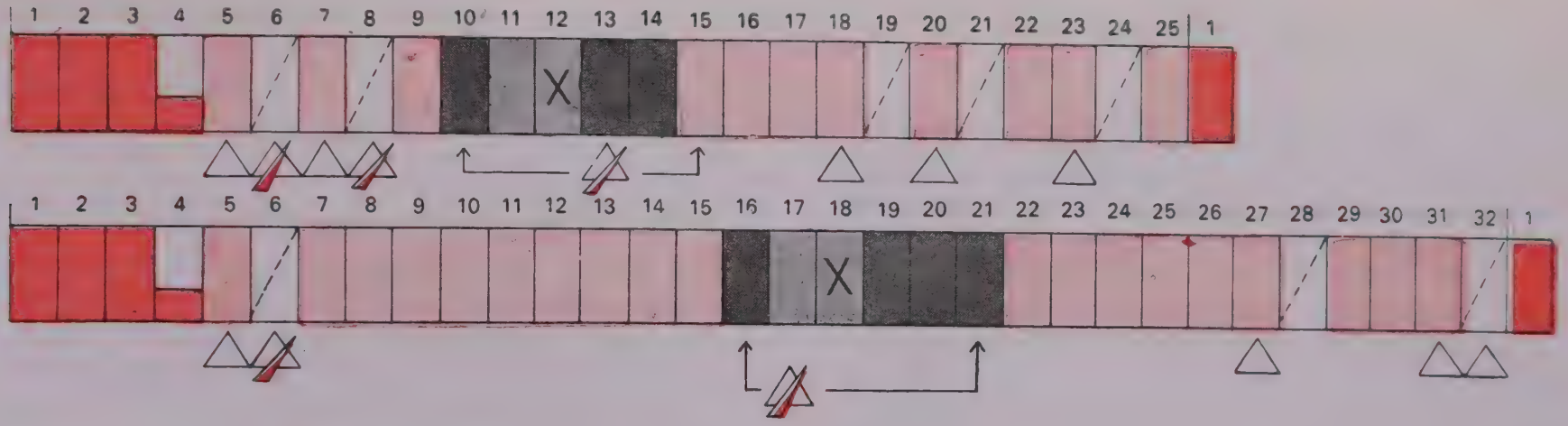
For normal couples to achieve a pregnancy it takes upto six cycles. Hence try not to get impatient and anxious, all the more as mental stress is known to adversely affect the functioning of the ovaries and so the mucus flow decreases or disappears. If the stress is marked, then even ovulation is suppressed. Factors that help to produce a good mucus secretion are adequate rest, a balanced diet and a stress-free life. (For details see "Useful information on health and hygiene" in the Appendix).

Identifying a Pregnancy : The temperature recording offers the earliest clinical and the most reliable indicator of pregnancy. Once your chart shows a **high** temperature phase **covering 18 – 20 days**, it is 99% certain that conception has occurred.

Prem's rule for the estimated date of birth (EDB) is : Date of the Peak or the first temperature-rise (ovulation day) plus 9 months minus 7 days = EDB; e.g. if the date of the first rise is January 30, add 9 months = October 30; then minus 7 gives October 23 as the EDB.

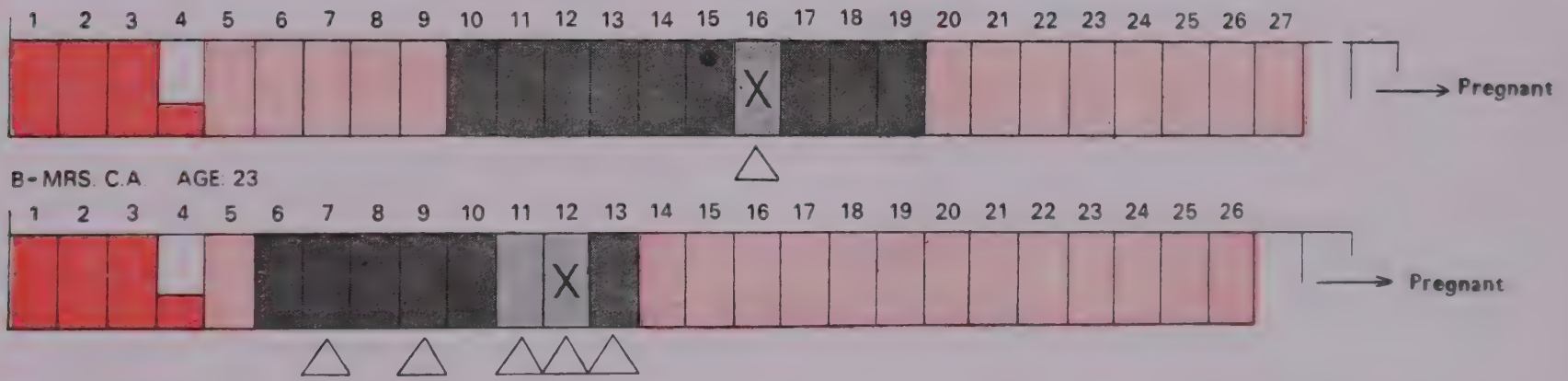
No calculation can be fully accurate due to normal variations in the duration of gestation. But Dr. Prem's rule is more accurate than the old Naegale's formula because it takes the probable day of conception, as judged by the Peak or the first temperature-rise into consideration. Prem's rule is specially useful when a woman has a history of irregular cycles and then has to undergo a Caesarian operation.

1) AVOIDANCE OF CONCEPTION



2) ACHIEVEMENT OF CONCEPTION

A-Mrs. C. G. Age 26



3) CHOOSING THE SEX OF THE BABY

Figure 32 EXAMPLES OF ACTUAL CHARTS

THREE POSSIBLE EFFECTS OF STRESS ON THE MUCUS SEQUENCE

A variety of factors can disturb both the mucus pattern and ovulation, though the commonest one, perhaps, is stress. It affects ovarian activity in varying degrees. Stress can be caused by heavy manual work, chronic lack of rest, malnutrition, travel, illness, dieting, or any serious mental upset etc. However, some women have normal cycles *even* when stress is present.

Fig. 33 (A, B, C) shows a stress situation occurring from Days 8 to 12 of a cycle with 3 possible effects :–

A) The mucus sequence is delayed (Double Peak)

The stress occurred when the mucus began and it prevented its normal build-up. Once the stress ceased, the normal mucus pattern developed after a few days, with a true (ovulatory) Peak on Day 21, which was confirmed by the next menses appearing 14 days later. This cycle showing two Peaks is called a "Double Peak Cycle;" the first "Peak" (Day 11) being a false alarm.

B) The mucus sequence is suppressed

Here, the stress suppressed the mucus *and* ovulation, resulting in an anovulatory cycle. In the first example, the stress caused a BIP of dry days; while in the second the BIP was a daily, unchanging mucus.

C) The mucus sequence is undisturbed

Some women have cycles with a normal (ovulatory) mucus pattern *inspite* of being under stress.

Note : If you find anything stressful, watch if it disturbs your cycle or not. If it does, then note *how*, for future reference.

Rules for the avoidance of conception

In situation "A", (for the days *before* the second mucus sequence) and in situation "B," it is "Phase I" infertility. Hence the rules for the pre-ovulatory phase apply. As regards "C," if the mucus pattern is exactly similar to the woman's usual ovulatory cycles, she must apply the standard Peak plus 4–day rule to determine the first day of Phase III (see Fig. 31).

Help from the basal body temperature (BBT)

A woman properly instructed in the mucus method knows that stress can cause a double Peak, and so she takes the 1st Peak as a false alarm. But if a woman has normal cycles inspite of stress, she need not consider the 1st Peak as a false alarm. However, she would not know this for sure, if she relied only on the mucus. But if she took her BBT it would show a *rise* after it, proving that ovulation did occur (see Fig. 39).

Further, one occasionally sees a delay in ovulation *without* any noticeable stress, and so two Peaks are seen. In most instances they have *identical features* (Roetzer). Again, only the BBT will help to clarify matters : the absence of a BBT–rise after the 1st Peak indicates ovulation did **not** occur and that Phase I continues; while a rise after the 2nd one shows it **did** take place, and that Phase III is soon to begin. Hence, in a stress situation the BBT can be of much help.

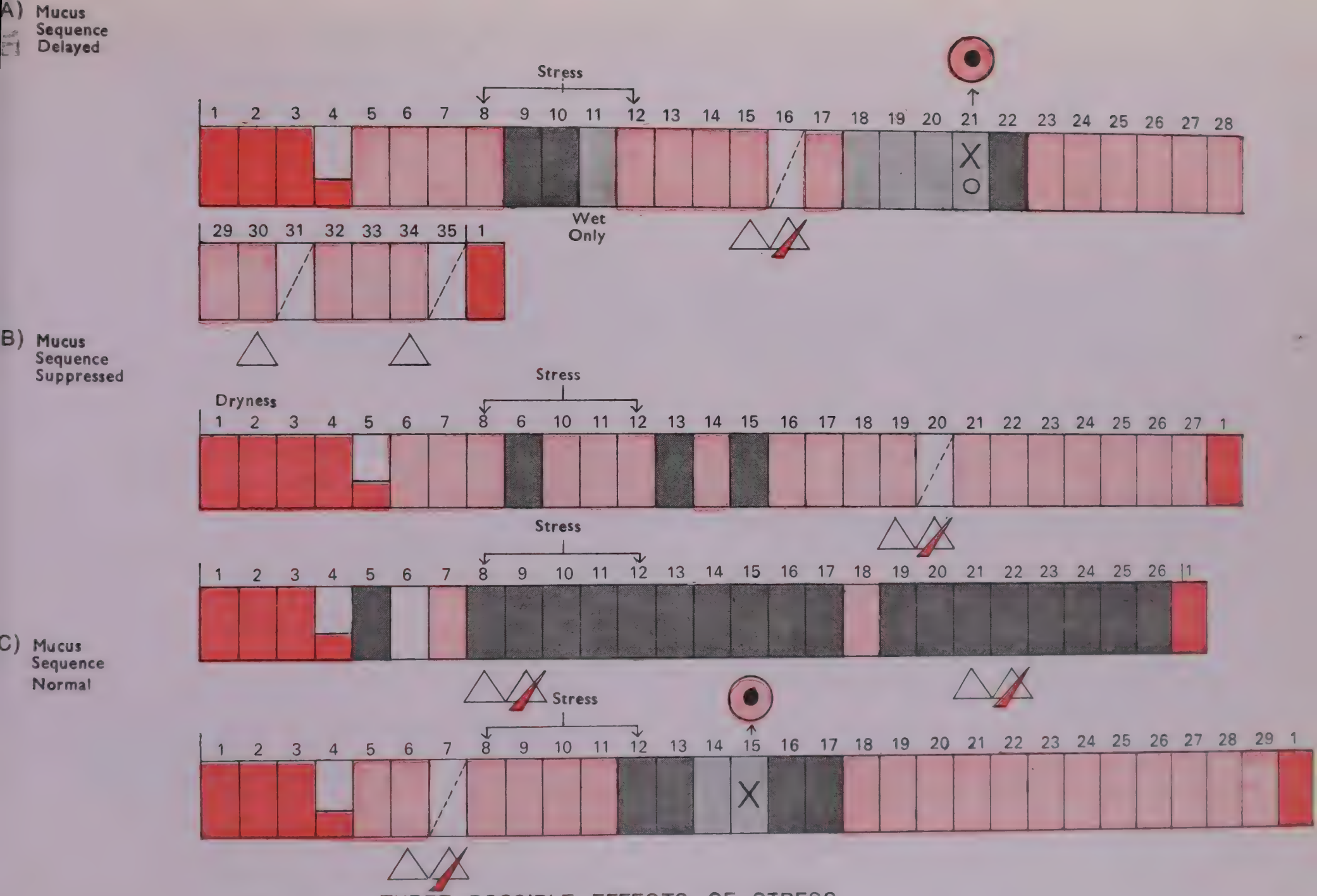


Figure 33 THREE POSSIBLE EFFECTS OF STRESS ON THE MUCUS SEQUENCE

THREE PATTERNS OF INFERTILITY DURING BREAST-FEEDING

Preliminary Note: Breast-feeding (BF) due to the suckling action of the baby, suppresses (via the brain) ovarian activity, i.e. ovulation and hormone production. Because oestrogen will be lessened, the mucus (produced by it) will in turn be decreased or absent. (i) infertility (no ovulation) is practically certain, for the first 12 weeks post-partum; and, (ii) the next 3 months have only about a 1% chance of conception occurring. It must be emphasised that points (i) and (ii) are true, *provided*, the BF is **total*** and, the **first menstruation has not occurred.** With partial or no BF the first 6 weeks only, are naturally infertile.

Rules for the avoidance of conception

The woman identifies what type of BIP she has. The BIP during lactation, before ovulation returns, can be :–

i) A continual dryness (Fig. 34, 1), commonly seen during total BF.

ii) Daily, unchanging mucus which is tacky, thick and opaque, or at times milky or watery in consistency (Fig. 34, 2).

iii) A combination of dry days interspersed with days of unchanging mucus, (Fig. 34, 3), usually seen in the later stages of lactation.

Having established her BIP the woman applies the "Rules for Phase I" particularly that rule pertinent to the BIP *she has*. For convenience sake this is repeated in Fig. 34, 1 and 2.

Weaning: is the process whereby the baby's diet is switched over from breast-milk only, to solid food which is usually a gradual process. Once weaning is introduced fertility will soon return with the return of ovarian activity. During weaning, the oestrogen level fluctuates and hence, so does the mucus pattern; consequently "patches" of mucus, even of the more fertile type are seen which may confuse the beginner. But a faithful observation of the rules for Phase I will see her through. The appearance of egg white mucus patches signals that the first ovulation will occur sooner or later.

In Fig. 34, A, note that, the first menstruation occurs after a shorter interval from Peak, than the usual 2 weeks. This is common in the first few cycles after child-birth.

Women must be aware of the signs of returning fertility after child birth, which are :

i) A decreasing supply of breast-milk.

ii) Re-appearance of mucus, chiefly patches of the more fertile type; and the cervix signs.

iii) The return of menstruation.

* The child gets all its nourishment from breast-milk *only*, including a night feed. It excludes all supplements, even sips of water. No pacifier is to be used. Ovarian activity *may* begin if BF (suckling) occurs beyond 6 hour intervals. Hence the number of hours between feeds is all important. Frequent suckling is encouraged.

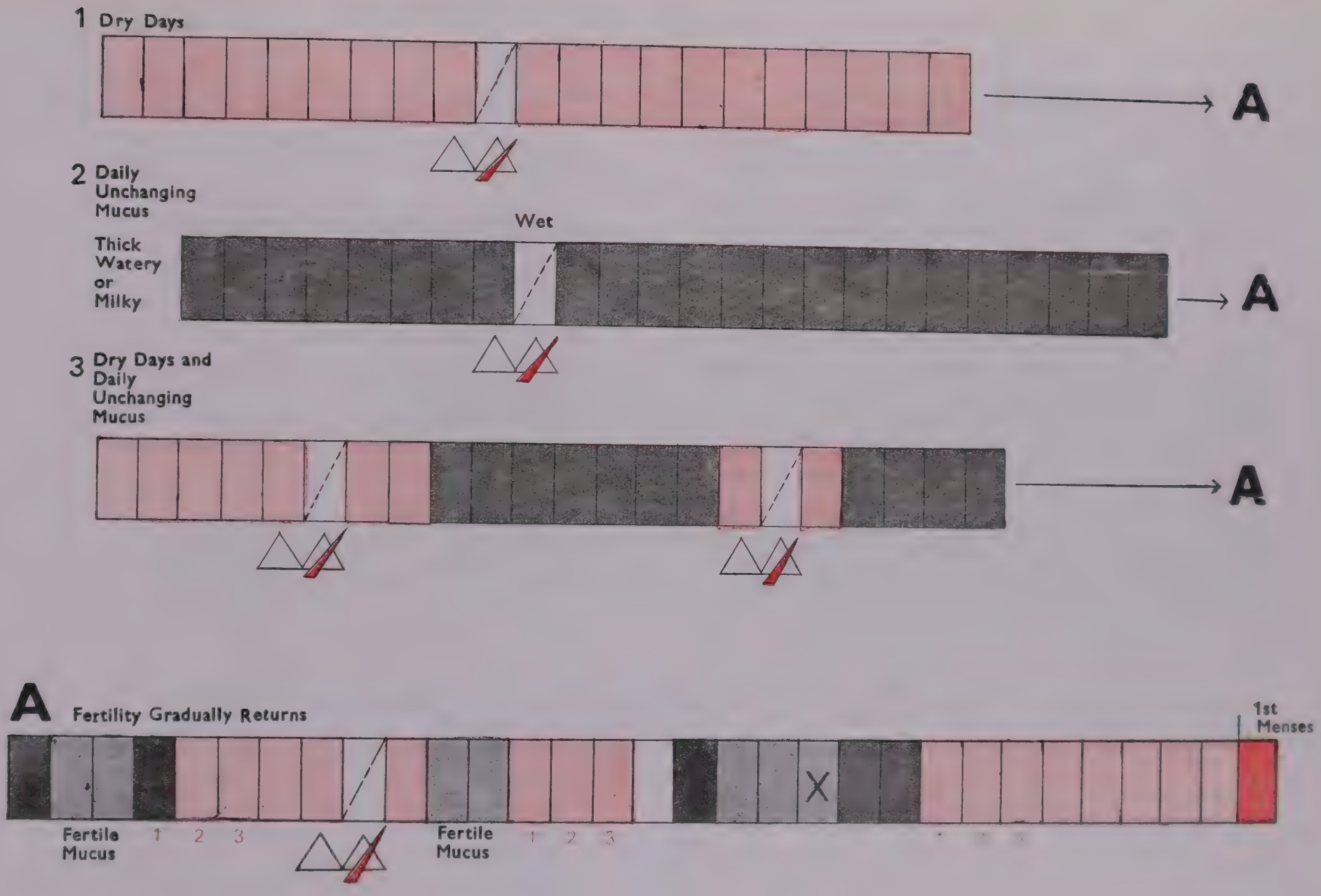


Figure 34 THREE PATTERNS OF INFERTILITY DURING BREAST-FEEDING

MUCUS PATTERNS DURING THE PRE-MENOPAUSE

Preliminary information: The cessation of a woman's fertility occurs between 45 – 55 years of age. The *transition* phase of reduced fertility just before this, which lasts from 1 – 5 years, is called **pre-menopause.** The changes in pre-menopause, called the 'climacteric' (change of life), are the following :–

Very often the first change is a shortening of the post-ovulatory phase to less than the usual 14 days. The menstrual periods usually become scanty. (A bleeding that is excessive and prolonged is never a feature of a normal climacteric). They may stop for several months, only to be replaced by normal cycles for a time. Irregularity in cycle length and anovular cycles are commonly seen. Vollman states that the former begins about 20 cycles before menopause. The mucus becomes scanty and of poor quality. In long cycles, inter-menstrual bleeding (IMB), and long patches of mucus are often seen. The last period is called **menopause**, which is only one sign of the climacteric, and precedes the complete cessation of ovarian activity by several months.

The features to be noted in Fig. 35, are : in **cycle A.** a short menstrual period, IMB on Days 7, 8 and 21, and a much shorter interval than usual between Peak and the next period. **Cycle B** is very short with mucus beginning immediately after the menses ends. **Cycle C** is a very long cycle (70 days); the BIP is a daily unchanging "mucus" with slight changes occurring now and then on Days 15, 22 and 23. In **cycle D**, there is almost a complete absence of mucus; dry days is the BIP; in retrospect, one can say that this is an anovular cycle.

Rules for the avoidance of conception

A pre-menopausal woman is usually over-anxious to avoid pregnancy. She should be reassured : that the chances of conception are very low; that the irregularity in cycle-length and the prolonged absence of ovulatory mucus patterns are no bar to the successful use of the method. To avoid conception she must first, find out what is her BIP and then to apply the "Rules for Phase I." For example in cycle A, any of the dry days may be used, applying the alternate night rule. Abstain on days of IMB and also for the next 3 days (Days 9 – 11). In cycle C the BIP is a daily mucus : use the alternate night rule, but if *any* change occurs (e.g. on Day 15) abstain, and also for the next 3 days as shown. In Cycle D : the BIP is dry days; as usual the rules for Phase I would apply right through.

The standard opinion is that if there are no menses for 6 consecutive months, there is only a very small possibility for a pre-menopausal woman to get pregnant. However to play safe, she should continue to check for the mucus for 12 months more. If she observes a mucus patch she should abstain on those days and for the next 3 days as well.

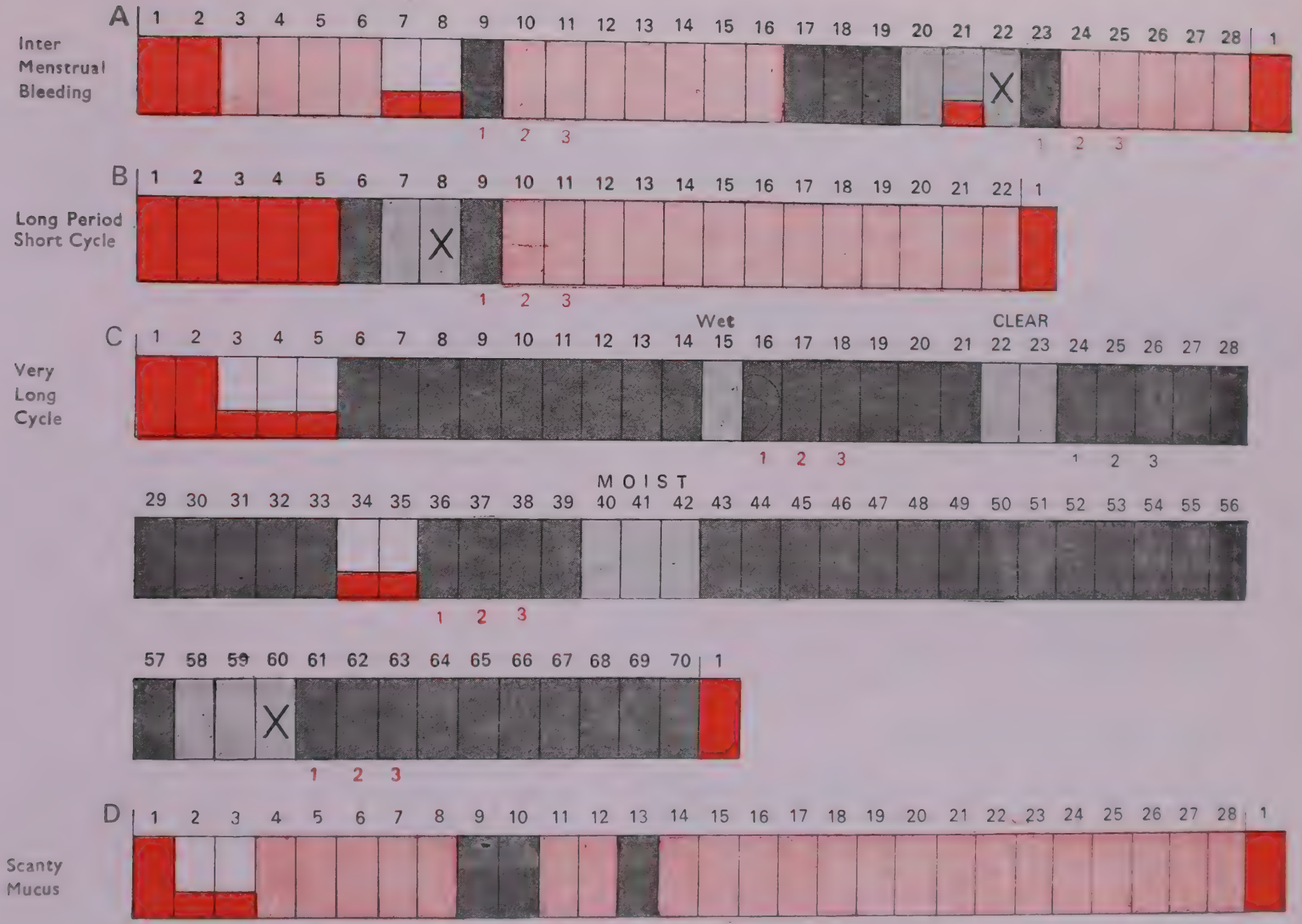


Figure 35 MUCUS PATTERNS DURING PRE-MENOPAUSE

Preliminary Note : The "Pill" prevents conception by a triple mode of action : suppressing ovulation; preventing sperm entry into the uterus (by thickening the mucus), and by preventing implantation of the newly formed human life at the blastocyst stage, by altering the lining of the uterus. The "high dosage" Pill acts mainly by the first way though it is admitted that ovulation does occur in two to ten percent of the time. The 'mini-Pill" (only progestin) and other "low-dosage" Pills seem to act mainly by the second and the third ways. The action of the Pill by preventing implantation of the zygote, like the action of the intra-uterine device (IUD) is certainly abortifacient and not merely contraceptive.

A few days after stopping the Pill, the woman will experience a withdrawal bleeding. The time taken for the return of fertility (ovulation) is variable : it may occur promptly or after several cycles which is more common. Rarely, it may never return resulting in permanent sterility.

Mucus patterns in post-Pill users

Cycles with a BIP of daily mucus that is watery or milky are common in these women (Fig. 36, A). The first few cycles are often anovular which is expected, as the ovaries take some time to recover their full activity. In the second cycle, under A, a clear-cut mucus pattern is seen, suggesting the occurrence of ovulation; there is a shorter than usual post-ovulatory phase. In Fig. 36, B the cycle shows a dry-day pattern; in retrospect one can see that it is an anovular cycle. The cycle under C, shows a BIP of both dry and mucus days, followed by a definite mucus sequence with Peak on Day 16. Again notice that the interval between Peak and the next period (as expected in post-Pill users) is shorter than normal.

Rules for the avoidance of conception

If the BIP of daily mucus changes (e.g. as on Day 14 in the first cycle in Fig. 36, A), abstain on that day and also for the next 3 days; in this case Days 14–17. When the marital act is had, the alternate day rule is observed. In Fig. 36, B the BIP is obviously one of dry days. With this type of BIP, abstain on any day that the mucus is seen or felt and also for the next 3 days. Once a definite fertile mucus pattern is established (pointing to an ovulatory cycle), sexual relations are had from the fourth day past Peak; and in Phase III, consecutive days may be used.

It is desirable that a woman does not conceive in the first 6 months after stopping the use of the Pill since the hormones (contained in it) are still present in her body during this period, which, the Pill manufacturers themselves say may cause birth defects. Doctors also mention the possibility of miscarriages as another adverse consequence.

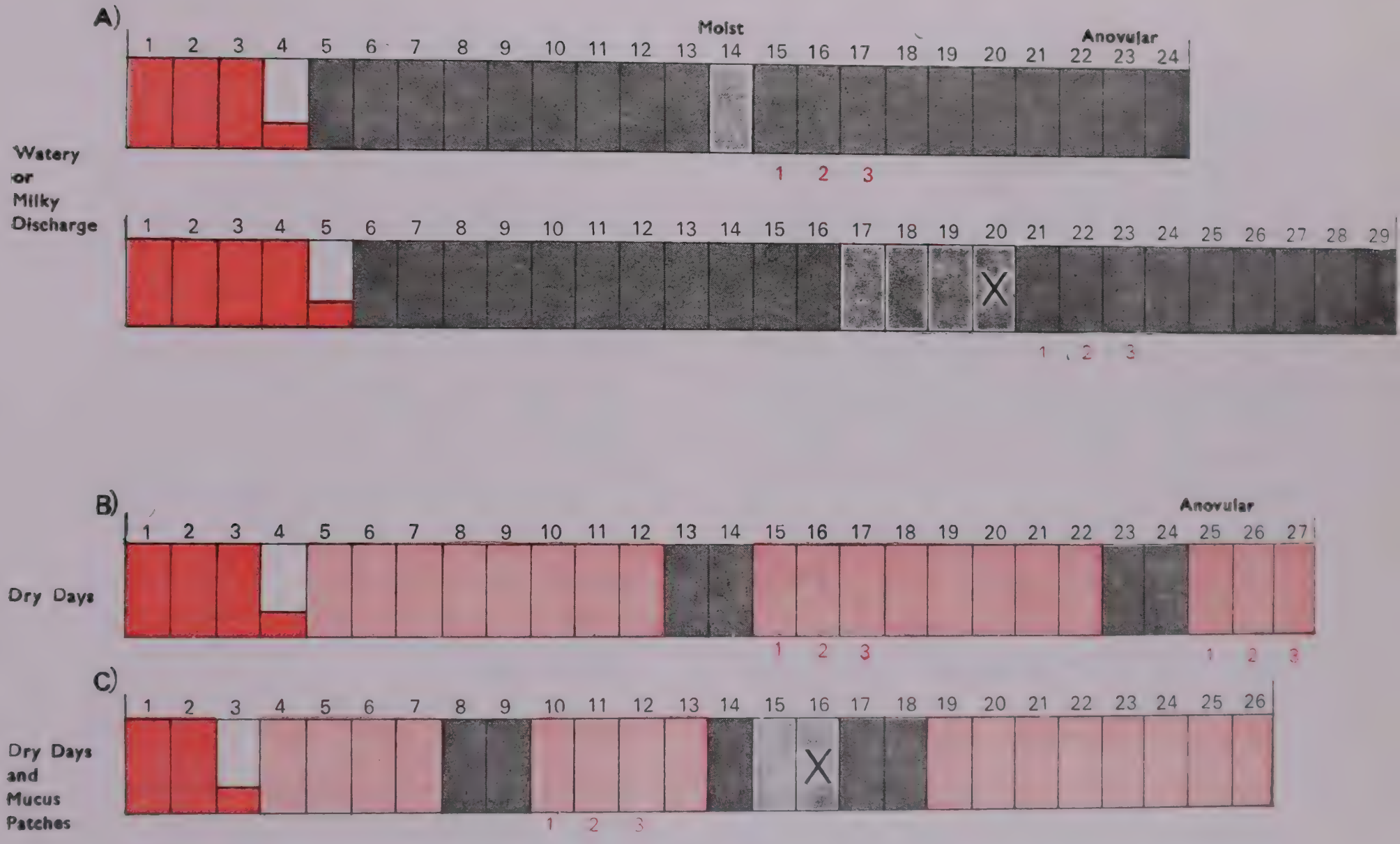


Figure 36 MUCUS PATTERNS IN POST-PILL USERS

The "Modified Mucus Method" is based on the cervical mucus sign of fertility and is a modification of the Ovulation Method (OM) of Billings. The modifications were made by Dr. K. Dorairaj of the Indian Social Institute, New Delhi, based on primary and secondary data to improve the acceptability of the OM among the Indian target population.

The Modified Mucus Method (MMM)

The couple abstains from sexual intercourse on the days of more fertile type mucus and after it stops for another two days and two nights as well.

Rules for the MMM for normal cycles (25 days and longer)

1) Sexual intercourse (SI) may be had on the :–

– *Last days of menstruation* when the bleeding has stopped and there is only a brownish discharge, *provided* you feel a dry sensation.

– Days on which *mucus is absent*, and dryness is felt.

– Days showing *thick*, *curdy*, *yellowish*, or *white* and *sticky mucus* provided dryness is felt.

2) In the pre-ovulatory phase limit SI to the night.

3) *After SI* at night, the next morning wash and *wipe* the vulva. If for the rest of this day there is no mucus, or if thick mucus is present together with a *feeding of dryness* in either case, SI may be had at night.

4) *Wetness* felt even once during the day after washing and wiping the vulva in the morning, is a sign of probable fertility and hence abstain from SI.

5) *Total abstinence from SI* begins as soon as the mucus becomes "*more fertile*" *and wetness is felt* the abstinence continues for "2 days and 2 nights" after the fertile mucus ends. After this all the days are infertile and safe for SI at any time of the day.

6) Once the more fertile mucus has been spotted there is no need to abstain if patches of fertile type mucus with dryness or thick, curdy mucus with wetness are observed at the *end of cycle*, *just before the next menses begins.*

To avoid the one month's abstinence while learning the method, the learning phase is divided over a period of two months:––

Learning Month I

1) Abstain on all days of the menses.

2) Check for mucus at the vulva three to four times a day.

3) SI should be limited to the *night* of a completely dry day i.e. mucus is absent and a dry sensation is present.

4) Wash and wipe the vulva the next morning after SI at night, and check 4 times that day; abstain from SI at night.

5) Abstain from SI when the mucus *begins* even if there are signs of infertility i.e. the mucus is thick, curdy white or yellowish together with dryness. Continue checking 3–4 times a day.

6) After the more fertile type mucus and wetness stop, continue abstinence for 2 days and nights. After this all the days are infertile and safe for SI at any time of the day.

Learning Month II

1) Observe rules 1 and 2 given above under "Month I."

2) Both, no mucus days and days of thick mucus may be used, *at night*, provided dryness is felt in either case.

3) Wash and wipe in the morning after SI at night. Check 3 – 4 times a day as usual, but *abstain at night.*

4) Abstain from SI as soon as the mucus becomes the more fertile type, and continue abstaining for 2 days and nights after the last day of more fertile mucus. All the days after this are infertile and may be used at any time of the day.

From month III the MMM is used.

II) The MMM in women with short cycles (20 – 24 days)

The rules and the learning phases are the same as in normal cycles, except that there is abstinence on all the days of menstruation.

III) The MMM in lactating women

A woman who is totally breast feeding (BF) starts checking for mucus 6 weeks after child-birth. With partial BF or women who are not BF, start checking for mucus 3 weeks after child-birth.

The learning phase lasts 2 – 4 weeks

a) Learning Phase I : 1st Week

1) Check 3 – 4 times a day for mucus.

2) A dry day (i.e. no mucus plus dryness felt) may be used at night.

3) Wash and wipe the next morning after SI at night. Check for mucus but abstain at night.

4) Abstain on days of any mucus or discharge.

b) Learning Phase II : 2nd – 4th week

1) Check for mucus 3 – 4 times a day.

2) Completely dry days and days of thick, cloudy, milky-white or yellowish mucus may be used, at night, *provided* dryness is felt.

3) Wash and wipe the next morning after SI at night. Check for mucus as usual but abstain at night (i.e. SI only on alternate dry and thick mucus days).

After learning Phase II, the following rules are observed till ovulation occurs and normal menstrual cycles begin:–

1) Check 3 – 4 times a day for mucus.

2) SI at night on dry days and days of thick mucus if dryness is felt.

3) Wash and wipe the next morning after SI at night. If the rest of the day is completely dry, or there is a discharge with *dryness* then SI may be had at night. But if wetness is felt even once during the day then abstain that night.

4) Abstain from SI on days of more fertile type mucus with wetness, and also for the next 2 days and nights after the wetness stops.

B) THE SYMPTO-THERMAL METHOD

SIGNS AND SYMPTOMS BEFORE AND DURING OVULATION

With the Sympto-Thermal method, besides the cervical mucus, other natural signs and symptoms of ovulation are used to detect the fertile and infertile phases in the menstrual cycle. These are, i) the ovulation symptoms ("Sympto") and ii) the rise in the basal body temperature ("Thermal").

Signs before and during ovulation : In order of importance these are :

i) Mucus ii) Changes in the cervix iii) Pain

iv) Slight bleeding v) Vulval swelling.

i) Mucus: This symptom has already been described in detail under the mucus method (see text of Figs. 24 and 25).

ii) Changes in the cervix : These form very useful evidence of the fertile days and will be given in detail in the text of Fig. 38.

iii) Pain: A small percentage of women experience pain around the time of ovulation. It is felt in the lower abdomen on one or other side over the area where the ovaries lie; but (according to one researcher) never on both sides (Fig. 37, A). Women describe it as either a dull heaviness, or a cramp-like pain that comes and goes, waxes and wanes in intensity. She is able to put her finger on the exact spot where the pain is experienced, without difficulty. The pain is usually of a low intensity but at times is intense enought to incapacitate the woman. Its duration varies from a few minutes to twelve hours; at times it lasts for a day or two. The pain may also be experienced in the lower part of the back (Fig. 37, B) which often radiates to the front. It resembles labour pains, but is of a much milder intensity.

The cause of the pain is disputed, some think it is due to tubal contractions caused by a high oestrogen level; others believe it occurs when the wall of the ovarian follicle ruptures etc. Hence it cannot be stated with certainty whether it occurs before, during or after ovulation. Probably the pain most often takes place just before it.

iv) Slight bleeding: This is a small intermenstrual flow of blood from the uterine lining called "spotting" since it spots the clothing. It is a rather infrequent symptom but may occur with considerable constancy in those women who experience it. It is more often seen in long cycles than in average ones. It appears by itself or with the mucus giving it a reddish or brown colour. Rarely, the amount may be large enough to be mistaken for menstruation. But it can be differentiated from it because this bleeding occurs when the temperatures are at the low level; while the menstrual period is seen only when the high temperature level *ends*.

v) Vulval swelling: At the time of ovulation, women often notice a "greater convexity" of the vulva; this is due to a slight swelling of the tissues, specially the major lips.

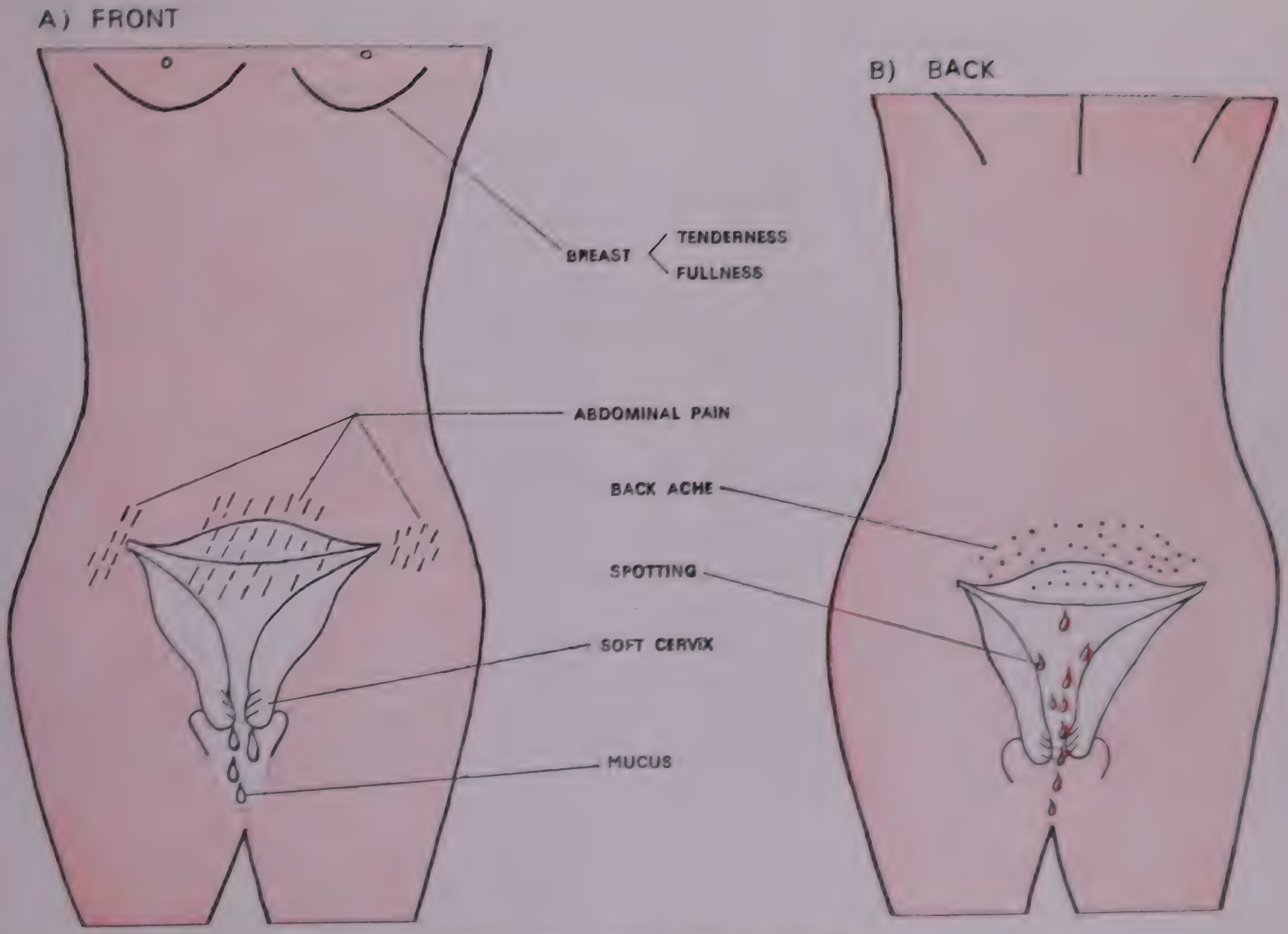


Figure 37 SIGNS AND SYMPTOMS BEFORE AND DURING OVULATION

CHANGES IN THE CERVIX IN RELATION TO OVULATION

At the time of ovulation, the cervix shows definite changes that can help in determining the extent of the fertile days. The cervix is the lower end of the uterus. Its lower half opens into the upper part of the vagina. Its opening or mouth feels as a small hollow in the centre.

In Phase I (Fig. 38A) : the cervix (after the period) feels *firm* (like the tip of the nose), *closed & dry*. Its level is *low* in the pelvis, and so the woman can easily reach it with her examining fingers.

In Phase II (Fig. 38B): it gets progressively *softer* (as soft as the lip) & its level is *higher* by about an inch, which makes it difficult to reach. Its mouth is *open* and it feels *wet* due to the presence of mucus. These changes are seen best on peak-day. The appearance of even one of these changes indicates that the fertile phase (II) has begun.

In Phase III (Fig. 38C): the cervix again becomes firm (F) closed (C) & low (L); however it is often found to be a bit lower and its mouth more tightly closed than in Phase I. Phase III begins from the 4th day (evening) of a cervix that is F, C, L and dry, *provided* there is also a temperature-rise seen for 3 days.

These changes are individual to each woman. Hence each one must learn what is firm/soft, closed/open and low/high for *her*. It takes 3–6 cycles for a woman to learn her own pattern of cervix changes.

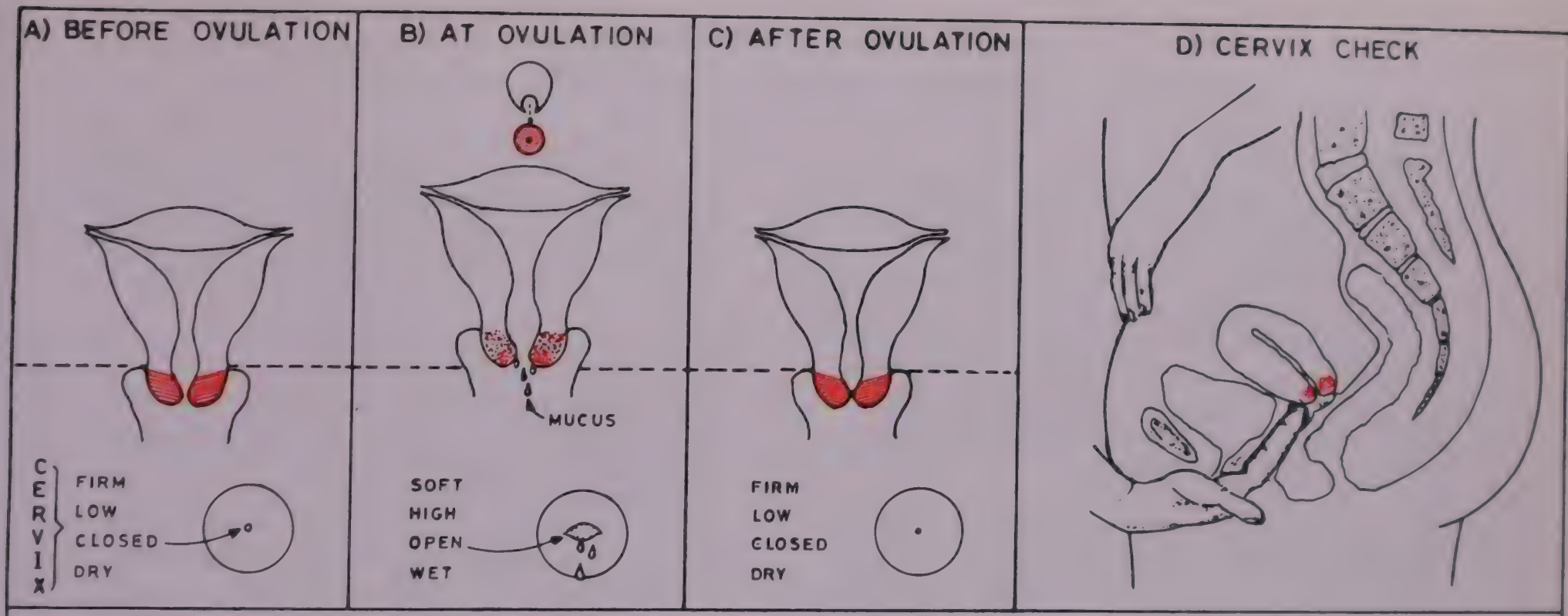
How to do the cervix check

After emptying the bladder, the woman first learns to touch the cervix with 1 or 2 fingers (with nails trimmed). This can be done in a standing, sitting or squatting position. If done standing, it makes it easier to reach the cervix if the left foot is placed on a low stool, and by pressing the abdomen with the other hand to push down the uterus (Fig. 38D). Always adopt the same procedure at every check.

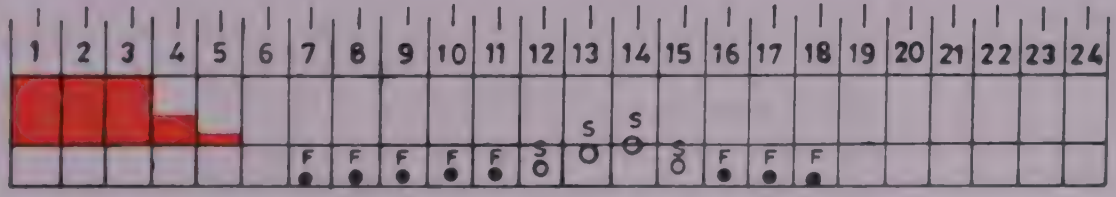
The best time to begin learning to touch the cervix is in Phase III when its level is usually lowest. Once the woman has learnt this, she then begins her daily cervix check from the start of her cycle after the menses is over. It is done twice a day, at noon and at night, *after* the external mucus check. How to chart these changes, using symbols, is shown in Fig. 38E.

Internal check for mucus : Place two fingers on opposite sides of the cervix and gently squeeze it to obtain mucus. The cervix is taken as "dry" if no mucus is found, or if a *continual*, very thick, sticky, white mucus is seen. If only a bit of this type of mucus is found, you are most probably infertile.

The cervix check is being increasingly used, as women find it to be very useful. It is of *invaluable* help when there is a continual discharge, e.g. during breast feeding and in the pre-menopause. Hence it is desirable that every woman learns her own cervix signs.



E) SYMBOLS



Cervix changes :-

F : FIRM

S : SOFT

● : MOUTH CLOSED

o : MOUTH HALF OPEN

O : MOUTH FULLY OPEN

Figure 38 CHANGES IN THE CERVIX IN RELATION TO OVULATION

FERTILITY SIGNS AFTER OVULATION

i) RISE IN TEMPERATURE ii) BREAST TENDERNESS & FULLNESS

Temperature-rise as a sign of ovulation

A natural "mirror" which reflects the occurrence of ovulation is a rise in the basal (resting) body temperature (BBT) to a higher level, that occurs after it (Fig. 39, A). This rise is usually by about 0.4°F on the first day e.g. from 97.0° to 97.4°. The range is 0.2°–1°F. This thermal rise remains at a higher level (than the temperatures before ovulation) till the end of the cycle. It usually begins to fall to the preovulatory level 2–3 days before the next menses begins.

The temperatures are shown by wavy lines in Fig. 39, A to indicate slight day to day variations; yet two levels can be clearly identified : a "low" level from the first day of the cycle till ovulation, and a "high" level from ovulation till the end of the cycle (bi-phasic pattern). The thermal shift to the higher level is caused by progesterone which is only produced after the yellow body is formed; and the latter only comes into existence *after* the ovum has left the ovary. Hence the rise in the BBT to a higher level indicates that ovulation has occurred. It is very useful for each woman to know the *average* temperature levels in her own case, specially the one after ovulation.

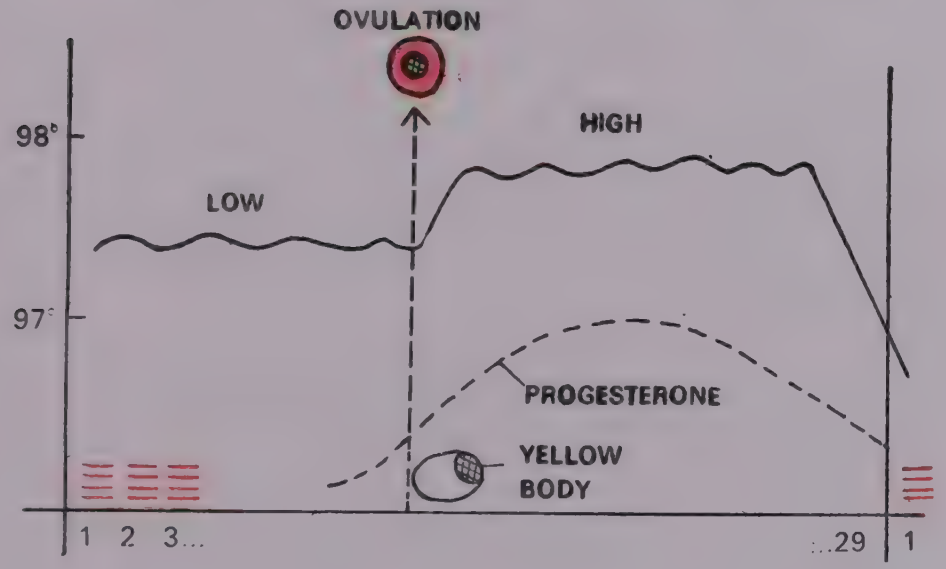
Fig. 39, B shows that when ovulation does not occur, the temperature remains at one level, as there is no thermal shift (mono-phasic pattern). This is so, since the yellow body is not formed; and consequently no progesterone is produced to cause the temperature-rise. Such cycles are called *anovular* and are common at the beginning and ending of reproductive life, during weaning and in post-Pill users. During active reproductive life they are very rare (1–2% of cycles).

Breast tenderness and fullness

Not all women have this symptom, but those who do, experience it regularly. It usually appears on the day immediately following the day of ovulation and is felt for a day more, usually coinciding with the first two temperatures on the higher level. Rarely it continues to be felt for several days more. Thus its presence helps to confirm that the BBT-rise is ovulatory in origin and not due to some other extraneous cause.

By breast tenderness is meant hypersensitivity (not pain) to light touch. To detect it the woman must apply light pressure with two fingers over the breast tissue just under the nipple, and not over the fat. She should begin checking for this symptom a few days ahead, say, when the mucus begins, for a few seconds daily, to get familiar with the normal sensitivity of breast tissue. Thus she will be able to detect the hypersensitivity when it appears. The fullness is experienced by the woman without having to examine the breast.

A) AFTER OVULATION TEMPERATURE RISES



B) NO OVULATION – NO RISE IN TEMPERATURE

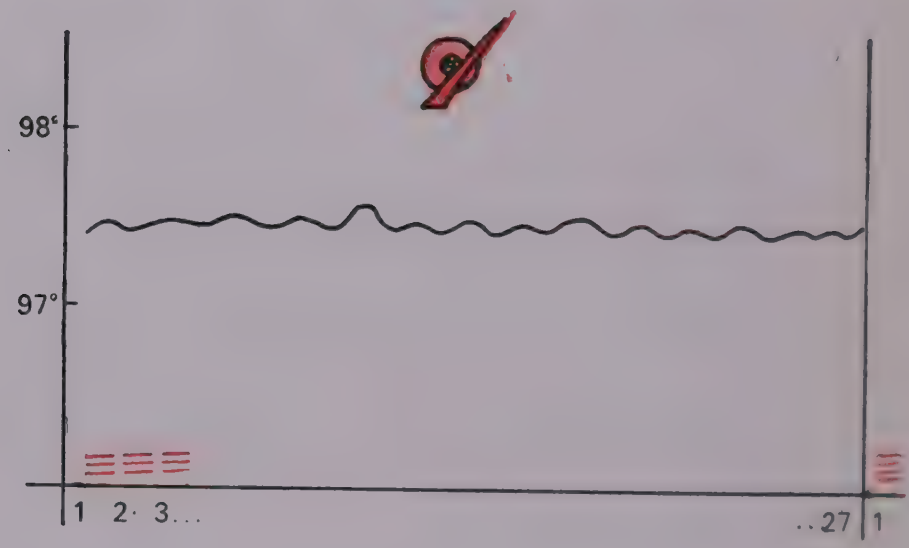


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Figure 39 RISE IN TEMPERATURE AS A SIGN OF OVULATION

DETERMINING THE PRE-OVULATORY INFERTILE PHASE (PHASE I)

Fig. 40 shows the type of chart used for recording the fertility signs that occur in a cycle. The temperatures for the first 10 days are recorded, e.g. on Day 1 it is 97.8° F. Where the (vertical) line of Day 1 cuts the (horizontal) temperature-line of 97.8°, a dot is marked, and so on for each day. The dots are joined from day to day. The first day of menstruation is always Day 1 of the cycle; the period lasted 3 days, followed by dryness from Days 4–8. On Day 9 the dryness ended, but no mucus was seen; so a ? was marked to denote that Phase I *may* have ended. On Day 10, thick, sticky mucus appeared, and with it one can say that Phase II (fertile) has begun.

Rules to determine the Pre-Ovulatory Infertile Days

1) The Six-Day Rule

The options for judging infertility beyond Day Six:–

2) Alternate dry days.
3) The Dr. Doering Rule (D.R.).
4) Shortest Cycle minus 20 Rule.
5) Consecutive nights after the Kegel Exercise.
6) The daily cervix check.

1) **The Six-Day Rule** (for cycles of 26 days or more).

With a **true** menstruation, **cycle-days 1 to 6** can be taken as infertile, as shown in Fig. 40–a.

The only bleeding that can be called a *true* menses is one that comes at the end of a high temperature phase in the previous cycle. With the onset of a true menses the first 6 cycle-days are infertile with a reliability (according to Dr. Roetzer) of 99.8% which he says, are "safer than the Pill." The chance that sexual relations had on Day 6 or earlier will result in conception is only 1 in 6000 cycles; and (he says) that too, only in very short cycles of 22 days or less. Even in such short cycles, the mucus in most cases does not begin on Day 6 but a bit later.

If on a very rare occasion, the mucus begins on cycle-day 6 take this day as potentially fertile and abstain.

–It is the first 6 cycle-days that are taken as infertile and not the duration of the period, which may go beyond Day 6.

– All bleeding other than menses, i.e. any bleeding not preceded by a high temperature phase in the previous cycle is to be taken as fertile (even if it seems "just like my period") since ovulation may occur during or after such bleeding. The woman must be aware of this specially in the postpartum and premenopause situations.

– For cycles of 23–25 days, *Days* 1–5 only are taken as infertile until the woman learns her own cycle pattern.

SYMPTO-THERMAL CHART

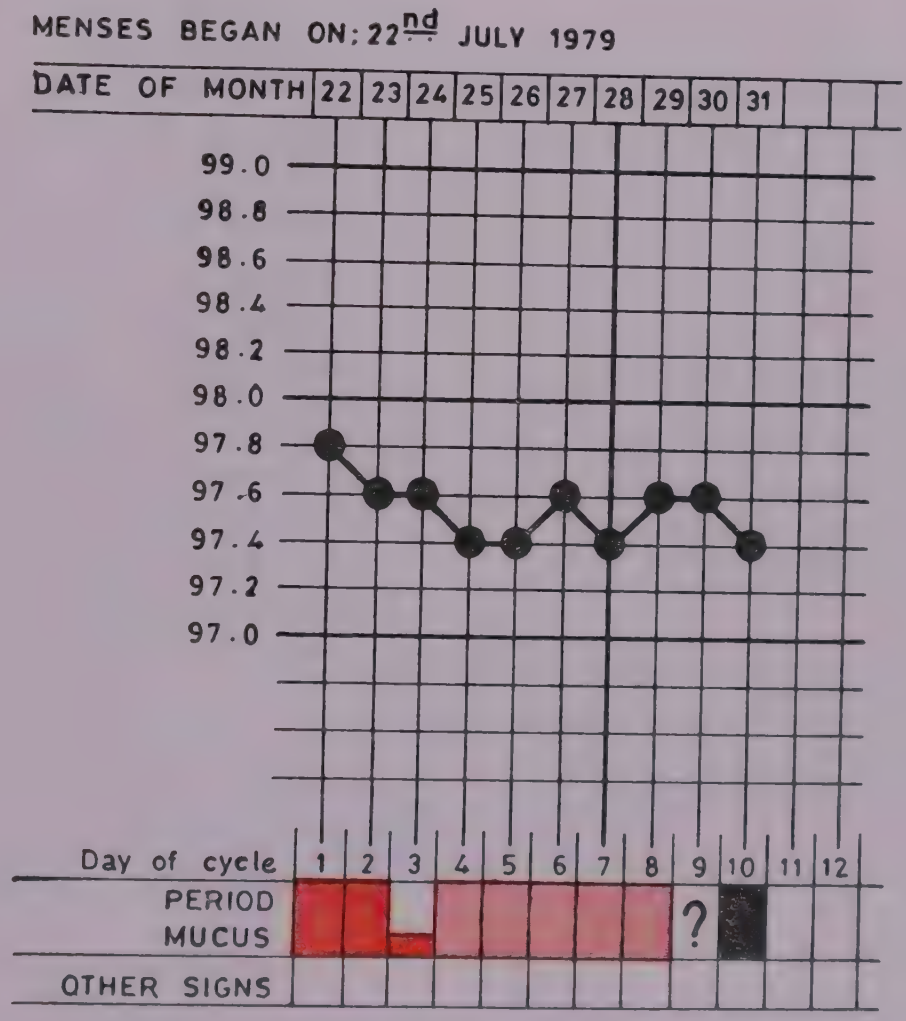


Figure 40 DETERMINING THE PRE-OVULATORY INFERTILE PHASE

– For cycles of 22 days or less, no days at the start of the cycle are infertile, until you have charted 6 such cycles and can evaluate the cycle pattern of your shortest cycle.

For beginners : To avoid conception use:–

i) The "Sympto–Thermal Rule" to determine the start of the post-ovulatory infertile part or "Phase III," (see Fig. 41), and

ii) The "Six-Day Rule" for the infertile days at the start of the cycle.

Rules for judging infertility beyond Day 6

First learn to appreciate the cycle pattern for 5–6 cycles before using cycle-days beyond Day 6. The mucus symptom is best detected from 3 checks, i.e. sensation, its presence on toilet-tissue and at the cervix.

For judging infertility beyond Day 6 it is strongly recommended that at least 2 of these 3 checks be used, besides, of course, taking the temperatures. The following choices are available:–

2) Use alternate dry days

If, for a whole day, the sensation and tissue show dryness, and the cervix is firm, closed, low and dry, the marital act may be had at the *end* of that day, followed by abstinence on the following day. This is because the seminal residue often resembles egg–white mucus and could hide the presence of the mucus which *may* have begun.

It is very helpful for the woman to learn to appreciate the *change* from dryness to "nothing felt" or to "moistness", *before* she sees visible mucus on the tissue. If moistness regularly precedes visible mucus, she can be sure that all the days *before* the appearance of the moistness are infertile.

3) The Dr. Doering Rule (D.R.)

Earliest 6th last low BBT = 1st Fertile Day

You first must have a record of at least 6–12 charts showing a temperature-rise (thermal shift) in which the last 6 low BBTs are marked in reverse, before the 3 higher temperatures. From this record find out the **earliest** cycle-day on which the 6th last low BBT occurred. This cycle-day, then, is taken as the **first fertile** day; hence all the days that precede it, can be considered infertile. Fig. 40–b illustrates this rule. From previous 12 charts the woman found that the earliest 6th last low BBT occurred on cycle–day 13, which by the D.R. is taken as her first **fertile** day. She drew a heavy vertical line before Day 13 to remember not to go beyond this day when having sexual relations, even though (in this cycle) two more dry days were available.

The Doering Rule is particularly useful :–

a) For a couple who feel more reassured to abstain from a fixed day, rather than having the marital act until a "change," occurs towards fertility, as judged from the sensation, mucus and/or cervix.

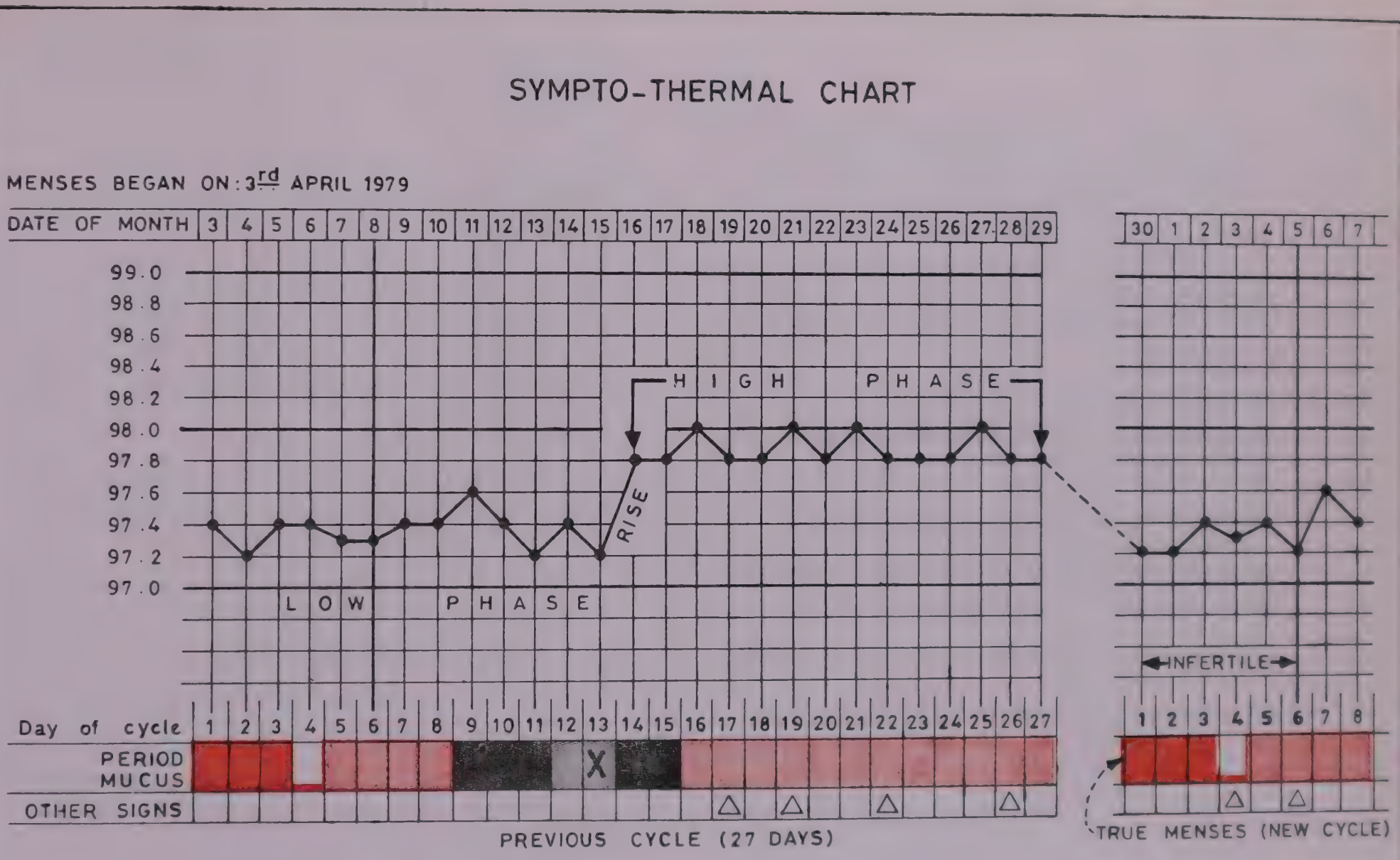


Figure 40-a THE SIX-DAY RULE

b) When a woman has a very short mucus sequence.

c) When there is difficulty in interpreting the mucus pattern, or if a continual discharge is present.

Note :
i) To play safe, always watch to see if the mucus appears before the cycle-day of the 6th last low BBT. If it does, then assume fertility immediately and abstain.

ii) If in a new cycle you get the 6th last low BBT appearing even earlier, then take that cycle day as the first fertile day for the future.

Effectiveness of the Doering Rule (D.R.)
The D.R. **with** a mucus cross-check should equal or even better the 99.7% theoretical effectiveness rate which Dr. Doering gets without it.

4) Shortest Cycle minus 20 = The last infertile day

From *written* records of the last 10–12 cycles find out your shortest cycle (S.C.). If e.g. the S.C. is 29 days, then 29–20 = 9. Then days 1 to 9 of the cycle can be taken as *infertile*. This formula has been found to be very reliable. Dr. Roetzer gets no pregnancies so far, with this "S.C. minus 20 rule."

Note : As usual, play safe by watching for mucus that *may* (rarely) begin on or before the last cycle-day taken as infertile. If it does, assume fertility for that cycle and abstain.

– If by chance, you get a shorter cycle than the one used, take that as your S.C. and use it when applying this rule.

How consecutive days can be used in Phase I

5) If dry after the Kegel Exercise (KE) : Consecutive nights are available

The KE helps to eliminate the seminal residue (SR) present in the vagina after the previous night's marital act. Hence, if after doing the KE, the woman feels dry, the marital act may be had at the *end* of the day. How to do the KE is given in the Appendix.

The KE has no "contraceptive" effect at all if mucus is present, as sperms can enter the cervix within seconds after the marital act is had.

If "moist" after KE : Abstain for 4 days. Inspite of doing the KE properly, moistness, wetness or "mucus" may be experienced. If so, abstain for 4 days after the day on which the marital act was had. It may be had on the *evening* of the 4th day, only if it is found to be dry.

After this continue to check for mucus and record the temperature as usual.

6) Daily cervix check

Check the cervix daily, the last thing at night. Dr. Roetzer says that the marital act can be had after Day 6 on consecutive days at any time of the day provided the cervix is found firm, closed and **dry**, *just before* the marital act is to be had.

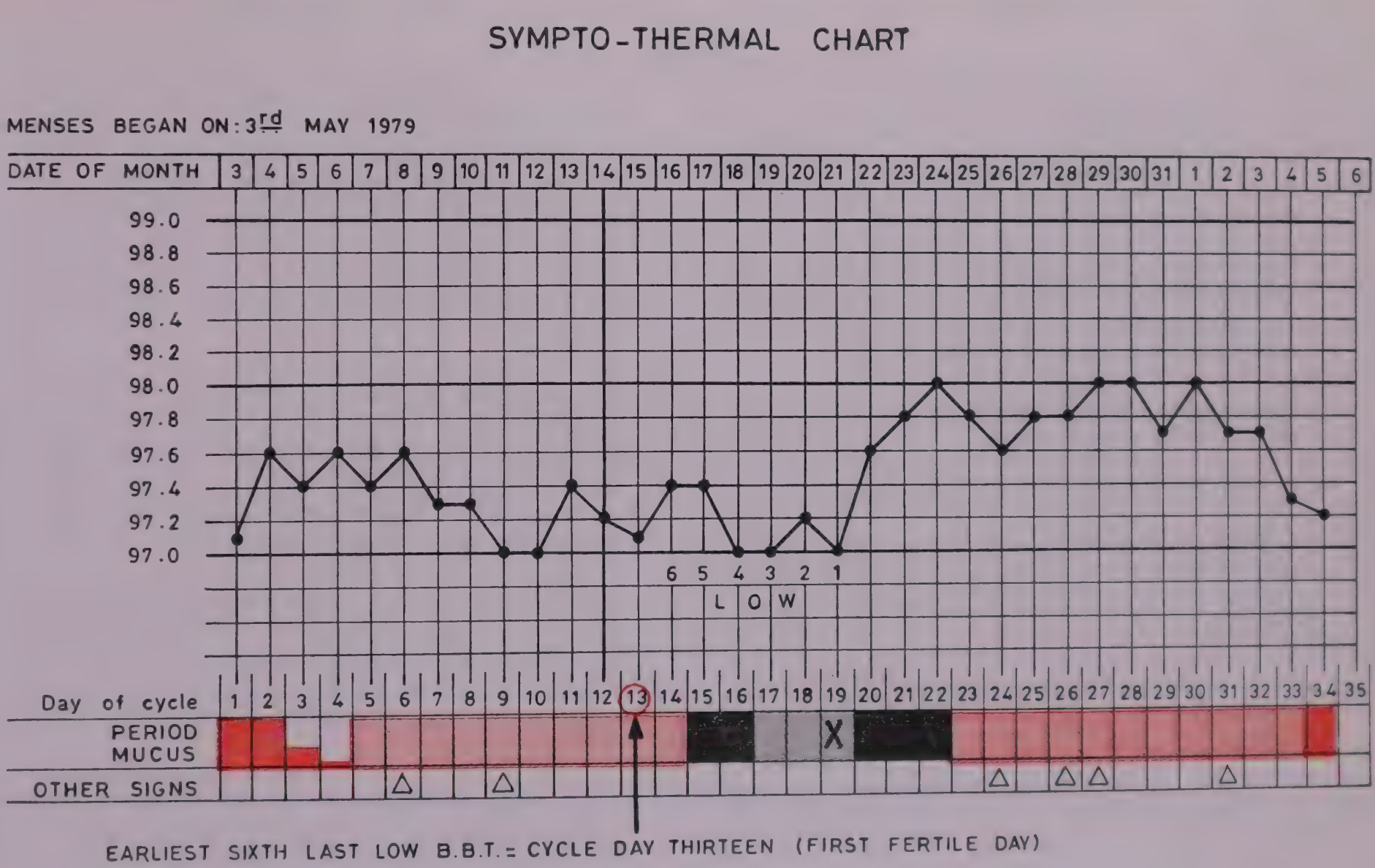


Figure 40-b EARLIEST SIXTH LAST LOW BASAL BODY TEMPERATURE IS THE FIRST FERTILE DAY

In Fig. 41 the same cycle shown in Fig. 40 is continued upto Day 16. It shows a typical mucus pattern with more fertile mucus (egg white type) seen on Days 11 and 12 followed by two days of less fertile mucus. The Peak mucus day is marked with a cross on Day 12 as this is the *last* day of egg white mucus or slippery wet sensation. The first rise of the BBT is seen to occur on Day 13; this almost always occurs one day after Peak. The BBT on Days 14 and 15 are also clearly *above* the preceding six low ones.

The Sympto-Thermal rule to determine the 1st day of Phase III (S. T. Rule)

1. Identify and mark the Peak Day (here Day 12).

2. Encircle the first three consecutive BBTs **after Peak** that are higher than the previous six. Number these six low BBTs in reverse as shown in Fig. 41.

3. The 1st day of Phase III is from the *evening* of **either :–**

a) the cycle-day of the **third** encircled BBT,
b) or the cycle-day which is the **fourth** day past the Peak whichever day comes **later**. Mark this with an arrow as shown.

In Fig. 41, the fourth day past Peak is Day 16. The cycle-day of the third BBT rise is Day 15. Thus Day 16 is marked with an arrow as the **first** day of Phase III because the condition "whichever comes later" is to be fulfilled.

N.B. : i) Should the fourth day past Peak and the cycle-day of the third encircled BBT coincide, then the condition "whichever comes later" will obviously not apply. The BBT almost always rises on the day after Peak; but if by chance the first BBT-rise occurs before or on Peak Day, do **not** encircle it.

ii) The pain on Day 11 is added evidence of Phase II.

Effectiveness: In Roetzer's study, there were no pregnancies in 17,000 cycles, when the marital act was had from the *evening* of the cycle-day of the *third* BBT-rise. The above "S. T. Rule" is more strict by one day than Roetzer's rule, hence it offers a greater reliability.

The changes in the *cervic* help to distinguish between a genuine high BBT level, from high temperatures due to illness etc. In the latter case, the cervix will not be soft and open etc., on the days immediately preceding the false high temperatures.

Using changes in the cervix : the Kippleys teach that the first day of Phase III begins from the evening of the fourth cycle-day after closure of the cervix, provided there are at least 3 BBTs higher than the preceding 6 low ones. The word "closure" means a cervix that is fully closed, low and firm.

SYMPTO-THERMAL CHART

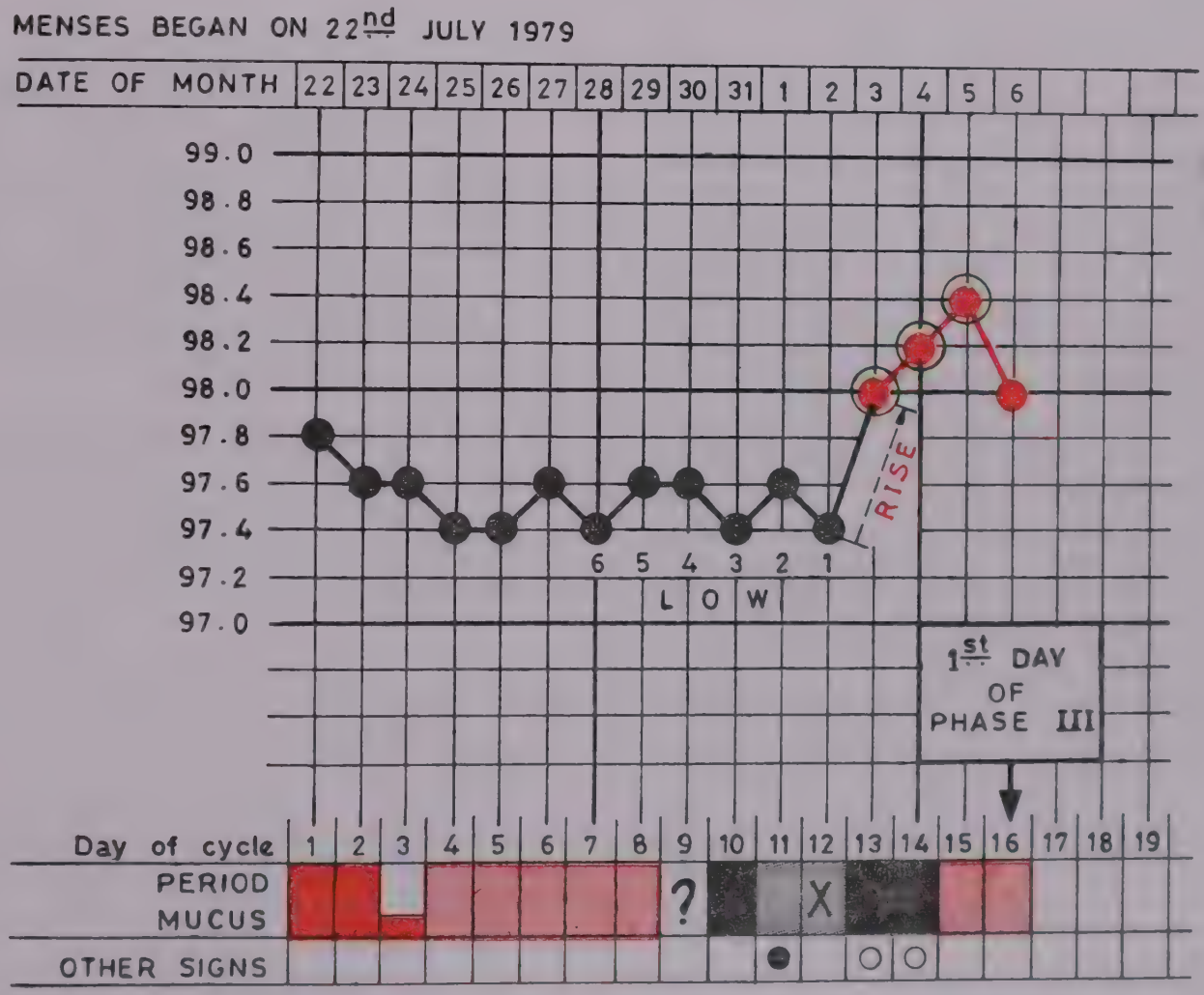


Figure 41 DETERMINING THE POST-OVULATORY INFERTILE PHASE

EXTENT OF THE POST – OVULATORY INFERTILE PHASE (PHASE III)

In Fig. 42, the same cycle considered in Fig. 40 and 41 is completed. It is meant to show the extent of Phase III which runs from the evening of Day 16 till the last day (Day 27) of the cycle.

During this infertile phase no conception is possible, because it is certain that by the evening of the third BBT-rise after Peak, the ovum which was released at ovulation, has passed its life-span (12–18 hours) and is dead; and other ova cannot leave the ovary since progesterone inhibits ovulation till the end of the cycle; thus, conception cannot occur in this phase of the cycle no matter how many sperms are present because there is no ovum available for fertilisation. Hence this infertile phase is also called the "completely infertile part" (CIP) of the cycle. Thus the couple can have sexual relations during the CIP with the full assurance that conception cannot occur. This explains Roetzer's zero pregnancy rate in 17,000 cycles for this phase. In an average cycle, the CIP usually covers a span from 10 to 12 days. In this phase, in Fig. 42, the marital act is shown six times. The slight wetness felt (due to the seminal spill) on the days following the day on which sexual relations were had, is recorded with a slanting interrupted line, (though there was no need to do so); the purpose being to get the woman habituated to record daily the type of sensation she feels, and not because abstinence had to be observed as in the pre-ovulatory phase. In fact in Phase III sexual relations can be had on *consecutive* days, as shown in Days 17 and 18, precisely because it is completely infertile for the reasons mentioned above.

Notice the two clear levels in the temperature (bi-phasic) : a low level from Days 1 to 12, and a high level from Days 13 to 27 indicating an ovulatory cycle, though the mucus sequence itself is positive evidence for this. Ovulation *probably* occurred on Day 12, and consequently one sees the BBT beginning to shift to the higher level on the next day due to progesterone secreted by the yellow body, that has just formed after the ovum left the follicle.

The following are the reasons why the couple should wait till either the day (evening) of the third consecutive BBT-rise or fourth day after Peak, before they can begin to have sexual relations :–

i) To allow for a wide margin of safety after ovulation, in order to give ample time for the ovum that was released by the ovary to die.

ii) Should a second ovulation occur, to give time for this ovum also to die. However, it must be said that a second ovulation occurring in the same cycle is a rare event and in any case it can only occur *within 24 hours* of the first, because after this the blood level of progesterone is high enough to exert its normal inhibitory effect on ovulation.

SYMPTO-THERMAL CHART

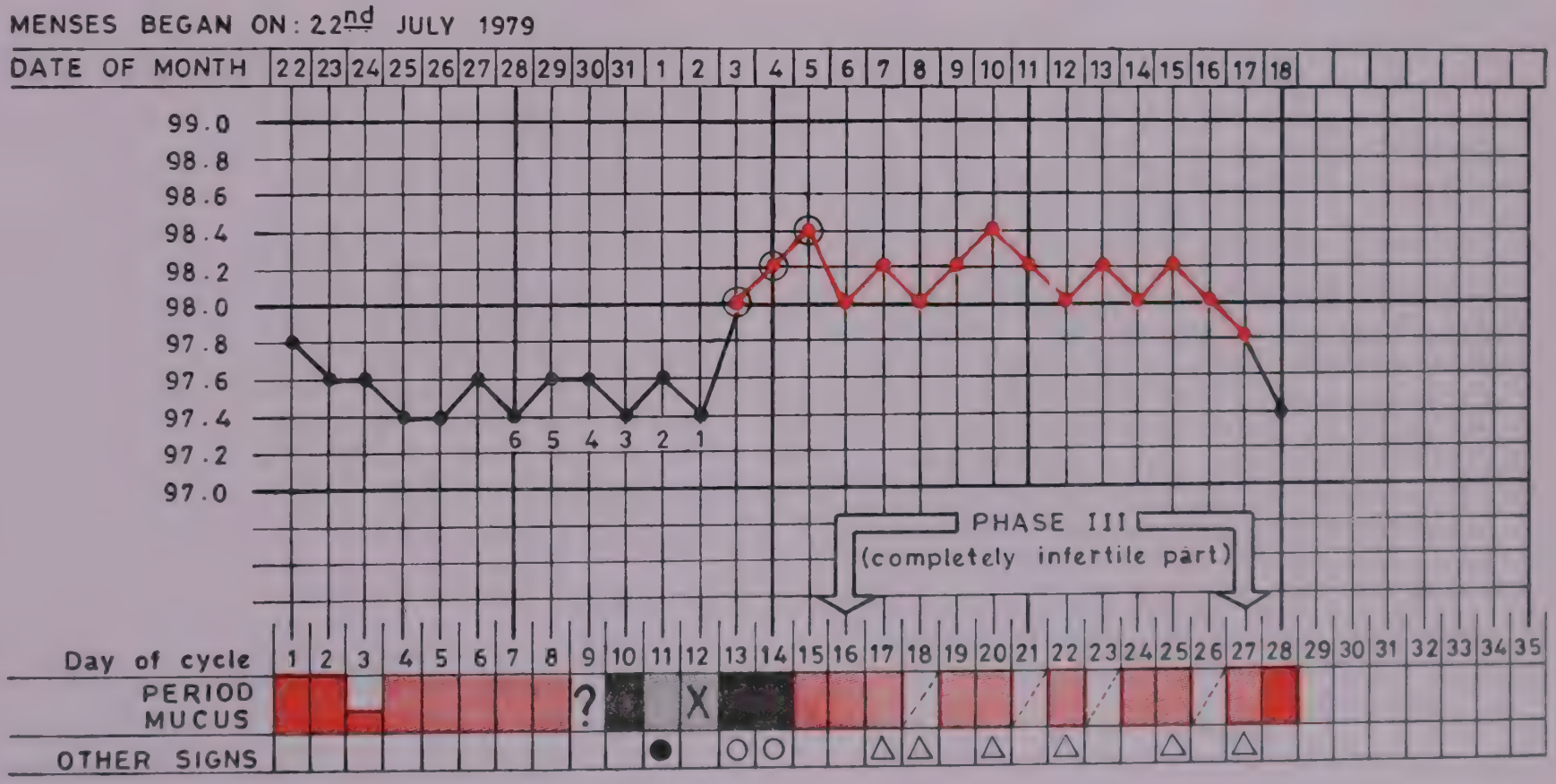


Figure 42 EXTENT OF THE POST-OVULATORY INFERTILE PHASE

EXAMPLE OF AN ACTUAL SYMPTO-THERMAL CHART

Fig. 43 shows an actual chart of a woman using the sympto-thermal method in the avoidance of conception. The couple belongs to the low income group; they are married for three years and have two children; after which they came to know of natural family planning (NFP), and began using it to avoid conception. She is 29 years old and has not completed her school education, whereas her husband has; he works in a factory.

Details of the chart

The BBT is taken by mouth at 5.30 a.m. each day. Coming to the recording itself, we see a cycle of 27 days. The menstrual period is of three days after which there was a run of dry days from Day 4 to Day 8. The mucus began on Day 9 and ended on Day 15. There were 3 days of thick (less fertile) mucus, 2 days of more fertile mucus, followed again by 2 days of thick mucus which disappeared by Day 16. From this day till the end of the cycle dryness was recorded. Peak was noted correctly by the woman as occurring on Day 13, being the last day of the more fertile-type mucus. Abdominal pain was felt on Days 12 and 13, just on the days when the eggwhite mucus was observed. Thus the pain which this woman experiences quite regularly offers valuable confirmatory evidence of the fertile days (Phase II) in the cycle.

Temperature pattern : Though the recording began only on Day 7 it was sufficient enough to bring out the bi-phasic pattern in the BBT; a low level from Day 7 to Day 13 and a high level from Day 14 to Day 26, with the drop to the pre-ovulatory level one day before the next menstruation began. This is a common feature, mentioned before, when explaining the function of the yellow body.

The couple has correctly marked Days 14, 15 and 16 as the first three temperatures that are on the higher level after Peak. Breast tenderness and fullness were felt on Day 15, the second day of the BBT-rise, which helped to confirm the BBT-rise as post-ovulatory. The "completely infertile part" (Phase III) begins from the evening of Day 17 and extends till the last day of the cycle-Day 27.

The couple had the marital act in the second infertile phase only; a choice which of course they are entirely free to adopt. Notice that they had it on consecutive days (Day 20 and 21) which is correct for the second infertile phase (Phase III). As usual, the wetness due to the seminal spill was record on the chart so that the woman gets the *habit* of observing the sensation she feels on each day, at the vaginal orifice.

Conclusion

One can see from this chart how in actual practice a couple through the observation of the natural ovulatory signs and symptoms can determine with accuracy, the fertile and infertile days of the cycle, and thus are able to avoid conception effectively. This couple have been using NFP successfully for the last four years and are happy with it. They are now teaching it on a regular basis to others.

SYMPTO-THERMAL CHART

NAME : Mrs. T. J.

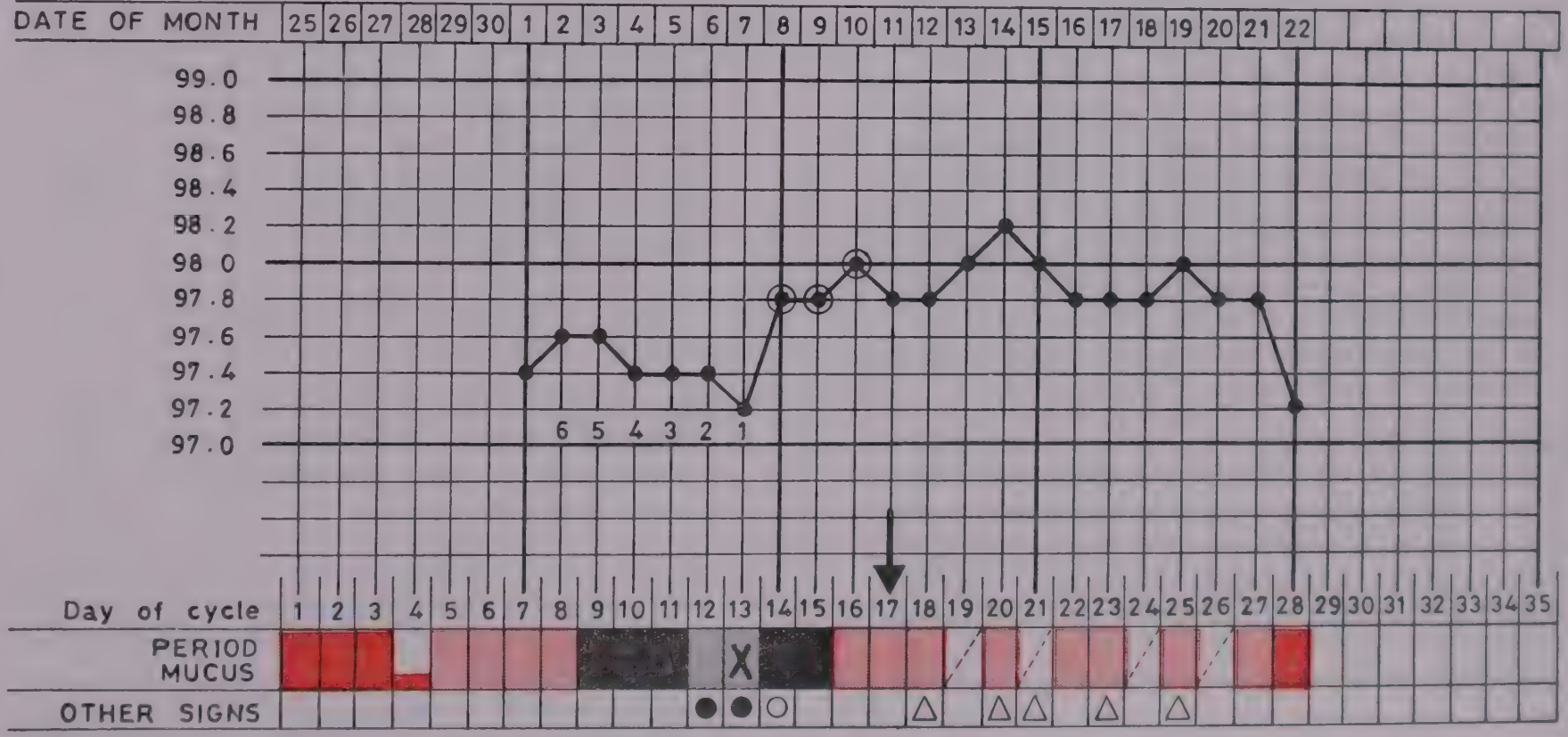
AGE : 29 YEARS

MENSES BEGAN ON : 25th JUNE

MOUTH : √
VAGINAL :
RECTAL :

YEAR : 1978

CYCLE LENGTH : 27 DAYS



NOTES

DAYS 12 & 13 ABDOMINAL PAIN

Figure 43 EXAMPLE OF AN ACTUAL SYMPTO-THERMAL CHART

TYPES OF THERMOMITERS / INSTRUCTIONS FOR TEMPERATURE-TAKING

Types of thermometers : In Fig. 44 (i), a clinical (fever) thermometer and under (II), two types of ovulation thermometers* are shown. The latter are easier to read as the divisions are further apart. The figures are self-explanatory.

Instructions for temperature-taking

1) Each night lower the mercury below 96°. This can be done by the husband. Never touch the bulb-end as this may alter the reading Keep it near the bed within hand's reach.

2) Each morning, (before any exertion), immediately after waking up take your temperature at a fixed time; though a time-gap upto 1½ hours is allowed provided it is taken before 7.30 a.m. If you had to get up at night for any reason, taking it after 1 hour's rest will give an accurate reading. Mild activity will not disturb the BBT. The three ways of taking the BBT are :–

Mouth route (M) : Place the bulb-end under the tongue for 5 full minutes by the clock, *with lips closed*, and breathe *only* through the nose. Take *more* care to get accurate BBT-recordings in Phase II. Each woman should find out the minimum time required for her thermometer to give an accurate reading. The M-route gives as satisfactory results if the instructions are followed exactly.

Vaginal route (V) : Insert the bulb-end about 2 inches into the vagina and hold it in place to prevent the thermometer slipping in or out. Keep it in place for 3 minutes only.

Rectal route (R) : Gently insert the bulb into the rectum while lying on one side with the knees drawn up; lubricate the bulb with vaseline if needed. Leave it in for 3 minutes.

3) Read the BBT immediately after taking it and note it in a diary kept near the bed; the charting can be done later.

4) In a thermometer with 0.2 divisions (as in Fig. 44, I and II A), if the mercury stops exactly between, say, 98.4° and 98.6°, then chart it as such (98.5°) i.e. half-way between the two horizontal lines of 98.4° and 98.6°. But if there is any doubt take the lower reading as the correct one (98.4°) and record this with a dot.

5) Note, *in brief* any illness, drugs taken, late nights, undue fatigue or tension etc.

6) Start a new chart when the menses begins, since the 1st day of the period is Day 1 of the cycle. Enter the morning BBT against Day 1 in the new chart.

–It is always beneficial from all points of view if the husband helps his wife in temperature-taking and in interpreting the signs of fertility with her.

–Women who, at times find it difficult to take the BBT daily, can start taking it when the mucus begins and stop once the BBT has risen for 3 days after Peak.

*available from : "Hicks Thermomiters Ltd., Industrial Estate, Aligarh 202 001."

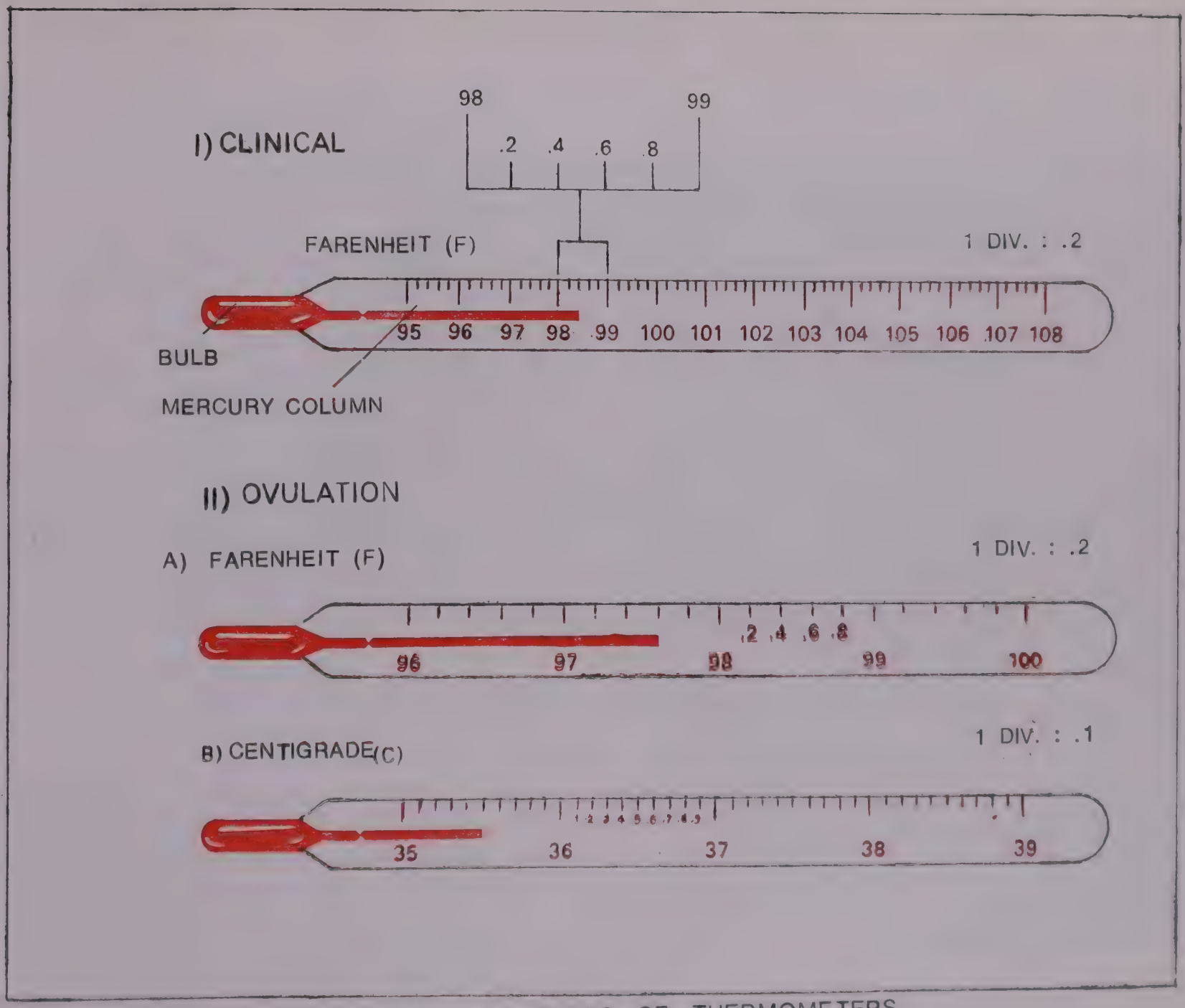


Figure 44 TYPES OF THERMOMETERS

A. Preliminary Information

The True Nature of Breast Feeding

"Total" breast feeding (TBF) as described below, adequately supplied *all* the nutritional needs of the infant for at least the first six months of life. Babies on breast feeding (as compared to bottle-fed ones) are healthier, e.g. they suffer much less from common illnesses like diarrhoea, respiratory and ear infections, etc. But TBF does much more, it also satisfies the emotional needs of the baby for security and love, as the mother's breast is the baby's best pacifier.

In this type of breast feeding, the mother too, is enriched. Through the constant togetherness, an intimate relationship is established and she experiences a deep sense of satisfaction and joy. One mother testifies follows: "I found myself head over heels in love with my baby! Everything about her was endlessly exciting and fascinating. I could hardly think about anything else. My feellings were so intense for several weeks that there seemed to be little room in my life for anything else." ("The Womanly Art of Breast Feeding", p. 155). That is why many mothers have wept when the breast feeding intimacy came to an end with weaning. This has not been the experience with mothers who bottle-feed their babies. This significant insight is mentioned by Sheila Kippley in her book "Breast Feeding and Natural Child Spacing."

Thus, total breast feeding is far more than just a means of food supply to the baby. Through the intimate closeness during this form of nursing *both* the baby an the mother gain; the baby is enriched physically *and* emotionally, and the mother is filled with joy and a deep sense of fulfillment.

What is "Total" Breast Feeding (TBF)?

Breast feeding is called "total", only when the following elements are present;

i) The baby gets *all* its nourishment *exclusively* from breast milk.

ii) No water is given (this he gets from breast milk).

iii) It always includes a breast-feed at night.

iv) The infant suckles on demand and not on a schedule; and for as long as he likes, with 8–10 feeds daily that are evenly spaced through 24 hours. The interval between nursings is never more than 6 hours. The nursing time should add up to at least two hours per day.

v) No pacifier is given to the infant, and there is no thumb-sucking.

vi) No expressing breast milk either with a breast-pump or manually.

vii) Weaning is done *gradually*; this usually begins at the end of the sixth month.

With this type of "total" breast feeding, the mother experiences, a long period of natural infertility. This effect is the result of the frequent suckling action of the infant that suppresses ovarian activity, indirectly via hormonal action. Consequently ovulation does not occur.

THIS NEW BORN IS OFF TO A HEAD-START WITH BREAST FEEDING !

Breast milk is the best nourishment for your baby! The first flow of creamy milk particularly, (called "colostrum") is highly nutritious and extremely easy to digest. It is also loaded with living cells and antibodies meant to protect your precious one from common infections. Further, breast milk is the best safeguard against allergies.

A new born has a natural inclination to suckle; in fact his suckling reflex peaks at about 30 minutes after his birth. So do what nature intended — put your baby to your breast immediately after his birth (as this mother is doing) and give him a head-start in life!

SECURITY AND PEACE AT HIS MOTHER'S BREAST !

Besides a baby's basic need for food, he has a profound and sustained need for security and love. This need *has* to be satisfied if he has to grow to be a healthy person.

Breast feeding offers the best possible way to cater to this vital need, because it involves the closest intimacy between mother and child. *All* the senses, specially touch, come into play in this one-to-one relationship; the warm skin-to-skin contact during breast feeding reassures the infant that he is loved! Hence nursing should continue as long as the child desires it. A baby often suckles more for closeness and security than for sustenance. Here is a 10-month old boy nestled securely in his mother's loving arms, suckling peacefully! Notice how intently he is gazing at her!

DURATION AND DEGREE OF NATURAL INFERTILITY AFTER CHILD BIRTH

a) **With TBF and before the return of fertility**

According to most experts in the field, **at least the first 12 weeks** after child birth are completely infertile, regardless of signs. There is no possibility of conception, **provided** the following 2 conditions are present:–

i) The woman is TBF, as described above, **and**
ii) her fertility has not returned. This is usually indicated by the appearance of the first menstruation (or any bleeding however slight) that warns the woman that ovulation will occur soon. Of course with TBF, the possibility of the menses returning in the first 12 weeks is rare. In fact, for most nursing mothers, this natural infertility lasts much longer than 12 weeks. Studies show that the **average** time for fertility to return in women who are TBF is 6–8 months; but for very many, it returns only 12 months after delivery. Further, if the suckling is frequent (2-hourly or less, as in many developing countries) and the baby is weaned late, breast feeding infertility continues even for 2 to 3 years.

One can safely say, then, that *during TBF*, the woman will experience a very high degree of natural infertility for the first 6 months and before weaning begins. This is virtually 100% in the first 12 weeks, provided of course the 2 conditions still hold: she is on TBF and any bleeding together with the other signs of returning fertility (given below) are absent. But with any departure from TBF (e.g. the omission of the night feed, or the addition of a bottle feed etc.) fertility can return earlier, since suckling action now is less. Yet, on the other hand we do see women who continue to be infertile for some time, even though supplements have been introduced.

b) Breast feeding plus supplements (from the 6th month till fertility returns)

Chances of conception occurring during this period : 5.4%.

Explanation : Usually at the end of the 6th month, the infant begins to show interest in other foods, and so supplements are introduced, and with this weaning begins. The breast feeding, of course, continues as before, and should be the mainstay of the baby's food intake for some time. As weaning progresses increasing amounts of solid food are given and so the number of breast-feeds decrease. Consequently, the suppressive action of suckling (on the ovaries) grows less and less, and so fertility returns sooner or later. When weaning is gradual (i.e. done at the baby's pace) the first menses appears much later, than if it is hurried through. With gradual weaning the first period appears about 12 months after child birth for many nursing mothers. Hence supplementary breast feeding with *gradual* weaning offers another 6 months of a high degree of natural infertility. However, it is always possible for the menses to return earlier, i.e. any time between the 7th and the 12th month post-partum, particularly if the weaning is done abruptly. An important study* reveals that once

* Bonte M. & Balem H. (1969) Journal of Biosocial Science, 1 : 2, p. 97.

weaning has begun and *before* the first menses returns, the chance of conception occurring is 5.4% (i.e. the degree of natural infertility is 94.6%). However it must be noted that the couples in this study were *not* practising NFP viz. no abstinence nor the fertility signs were observed. If these couples did attend to these two points, it is reasonable to say that the chance of conception occurring would be even less that 5.4%.

c) With bottle feeding (or partial breast feeding)

The first 6 weeks are naturally infertile.

This evidence is based on the extensive work of Dr. Roetzer (and many of his colleagues) who have never found a conception to occur during this period, even in women who are *not* breast feeding. The earliest date that conception took place, (he states in his book, "Family Planning, the Natural Way, p. 90) was : "at about the end of the seventh and beginning of the eight week after delivery."

For the non-breast feeding woman, beginning from the 7th week after child birth, fertility usually returns quite rapidly.

N.B. The above types of post partum infertility only apply to the time **before** fertility returns.

Partial breast feeding and natural infertility

So often one hears statements such as : "Even though I was breast feeding, I still got my period soon after delivery." Or, "She conceived soon after child birth even though she was breast feeding." The conclusion drawn is that breast feeding does not help to space births. But on careful inquiry, it will be found that the "breast feeding" referred to was **not** "total" at all in the sense given above, but partial. The result is that the suppressive action of suckling on ovarian function is not adequate. Consequently, the woman will not experience the extended period of natural infertility that is so characteristic of TBF. Hence, it is important to know the various types of "partial" breast feeding, so as not to confuse them with TBF.

Types of "partial" breast feeding practices

The breast feeding is called "partial,", when, besides nursing at the breast, the baby is given one or more of the following :–
- Bottle feeds (any milk other than breast milk)
- Any form of liquid : water, juices etc.
- Nursing at long intervals (over 6 hours)
- A pacifier for long hours
- No breast feed at night
- Semi-solid or solid food

With partial breast feeding, fertility may return at any time from the seventh week after delivery to the time when weaning is completed. This wide time-interval is due to the great variation in the type of partial breast feeding practices.

Types of mucus patterns after child birth

One of the 3 following basic infertile patterns may be seen :–

i) **Dryness** (no mucus) : A continual run of dry days commonly associated with TBF (see Fig. 34.1).

ii) **A continual unchanging mucus** of the less fertile type or moistness. Or the discharge may be milky and accompanied with a feeling of dampness. This is most commonly found in the later months of nursing, specially when solids have been introduced into the baby's diet (Fig. 34.2).

iii) **A combination of dry days and mucus patches** (Fig. 34.3). Each woman has to learn to recognise her *own* unchanging pattern in order to judge infertility. The *unchanging* symptom shows that the ovaries are inactive, and so, no ova are developing towards ovulation. Hence do not get upset if there is "no mucus at all" or a continual mucus that "never changes." In fact both patterns, if unchanging, tell you that you are infertile. It usually takes 2 to 3 weeks to identify which of the above three is *your* basic pattern.

The transition period from post partum infertility to normal cycles

With TBF, in the first few months at least, the pattern is usually one of dryness, with perhaps scanty mucus seen now and then. Less commonly a continual mucus or moistness is observed.

Once weaning begins the woman may experience patches of less fertile mucus; and as it comes to an end, the patches are often of the egg white type **without** being followed by a rise in the BBT. The temperature pattern is erratic and often shows big swings; its level is a bit lower than normal. Slight or even heavy episodes of bleeding (which are not preceded by a high temperature phase) may occur.

The first ovulation will be preceded by a noticeable flow of mucus and followed by a BBT-rise; this indicates a return to normal cycling. In this transition period, the cycle patterns are many and erratic; no two women will have the same pattern. For beginners this may understandably cause some anxiety. Hence it is important to understand the physiological basis behind these confusing mucus and BBT patterns in the transition period.

The two functions of the ovary relevant to fertility awareness and the practice of NFP, are : a) the production of the fertility signs, viz. the mucus, cervix changes and the BBT-rise and b) the release of an ovum – ovulation. During normal cycling, functions a) and b) always go together; the former being reliable indicators of the latter. However after child birth, it takes some time for the ovaries to return to full and normal functioning. It is in this interim period that women experience one function without the other, i.e. mucus patches that come and go, without being followed by a BBT-rise (no ovulation). Episodes of bleeding (that are not a true menses) may also be seen. All these mucus and/or bleeding patches are due to a temporary rise in the level of the hormone, oestrogen.

The signs of the return of fertility

Fertility (ovulation) can be expected to return after child birth, sooner or later, when any of the following occur :–

i) Vaginal bleeding even if scanty.

ii) Cervical mucus, specially of the eggwhite type is observed. This almost always appears *before* the first ovulation occurs.

iii) The cervix shows fertility changes : it softens, is open and higher; and mucus is detected at its mouth (see Fig. 38).

According to Dr. A. Flynn ("A Manual of Natural Family Planning," p. 89) the mucus is very helpful to detect the approach of fertility, but is unable "to distinguish between returning fertility and imminent ovulation. This is where the changes in the cervix can provide vital back-up information for distinguishing between possible fertility and impending ovulation, because progressive changes in the cervix do not occur until ovulation is close."

iv) The baby's suckling routine is abruptly lessened or stopped due e.g. to the illness of the mother.

v) Weaning occurs i.e. any time after the change from TBF to solid food has begun.

Fertility checks :

a) The standard checks are :
– the external check for the mucus, and
– the BBT recording.

b) The additional checks are :
– the internal mucus check at the cervix, and
– the changes in the cervix.

The resumption of sexual relations mainly depends on the state of the woman's health after the stress of child birth. It is medically safe to have the marital act from the fourth week after delivery by which time the *lochia* (the bloody discharge that occurs after delivery) has usually ceased. In case of doubt, consult your doctor.

Observing and charting the fertility signs during breast feeding

Adopt the standard procedure and begin observing the fertility signs from the *5th week* after delivery. Because of the dryness in the early months (due to TBF) the daily external check for mucus at the vaginal entrance will suffice for most women, upto the 12th week. Beginners should chart their observations. For the experienced woman, this is not strictly needed, as she is familiar with the long months of dryness.

From the 13th week till fertility returns : Daily mucus charting.

Observe *and* chart for the absence or presence of mucus, using the external check, though it must be kept in mind that the internal check for mucus and cervix changes always offer the best evidence. In any doubtful situation the cervix check should always be done.

When to start recording the BBT

Since during breast feeding, the BBT pattern is erratic (big swings, with no clear pattern) start recording the temperatures when one or more of the "Signs of the return of fertility" (given

above) appear, e.g. if vaginal bleeding, even if slight is seen, or mucus appears; or the cervix is found more open and high etc.

Note : In the post partum period (as also in the pre-menopause) it must be emphasised that the "additional (fertility) checks" mentioned above, offer the most reliable evidence regarding impending ovulation. That is why, Dr. Flynn says : "We advise all women to gain experience in detecting and charting cervical changes during their normal fertile cycles, so that when they require a double-check indicator for returning fertility after child birth they know exactly what to expect and look for" (P. 92 in her book).

A) WITH TOTAL BREAST FEEDING (TBF)

Rules for the avoidance of conception :–

i) **For the first 12 weeks post partum**

Dr. Roetzer states : "In our current state of knowledge, we can say that pregnancy has never occurred during the first 12 weeks post partum for the totally breast feeding mother" (P. 91 in his book). Further, this holds true regardless of any signs like mucus.

Rule : Any days from the 5th to the 12th week may be used.

Because of the intensive nature of TBF, dryness is the infertility pattern, usually, during the first 12 weeks. If by chance any mucus is observed you can overlook it. Note that, this virtually 100% natural infertility holds true, we repeat, **only** if the breast feeding is total, **and** the menses has not returned.

ii) **From the 13th – 24th weeks** (6th month)

Due to TBF, the degree of infertility during this time-period is very high, though at a slightly lower level than during the first 12 weeks.

When the pattern is :–

a) **Dryness** (no mucus) : apply the alternate dry day rule.
This rule of having the marital act at night on alternate dry days is the standard rule for Phase I in the mucus method (see Fig. 30). This dry pattern is commonly seen and to be expected. In fact (as mentioned above) it can extend upto the sixth month.

b) Continual unchanging mucus :
- Alternate night rule
- Peak + 4-day rule

This daily mucus is commonly of the "less fertile" type (thick, sticky & opaque). Having determined for 2 to 3 weeks that this discharge *is* unchanging (i.e. remains the less fertile type) take this pattern as infertile during breast feeding and (as for dry days), apply the alternate dry day rule.

With any change in this pattern towards fertility e.g. if the discharge increases in amount, or changes from opaque/sticky to clear/slippery mucus, then apply the Peak + 4-day rule (provided no BBT rise occurs by the 3rd day past Peak). In other words, abstain from the day of change until the evening of the 4th day past Peak.

With this type of continual discharge, the cervix observations are of *invaluable* help as a cross check.

c) **Dry days and mucus patches :** apply the relevant rule.

For dry days use the alternate night rule, and for the mucus patch (of whatever type) apply the Peak + 4-day rule, if no BBT–rise is seen by the 3rd day past Peak. If the patch is of the less fertile type (which is usually the case at this stage), the last day of the thick, sticky mucus is taken as the Peak. From the evening of the 4th day past Peak and for the days that follow, you can assume infertility if the mucus has dried up and the pattern has returned to dry days.

d) **Patches of bleeding (spotting or heavy)**

These patches are not preceded by a high temperature phase. Hence, assume fertility (as if mucus were present) and apply the Peak + 4-day rule, taking the last day of bleeding as Peak.

Note : i) The BBT continuing to be at a low level after a mucus patch dries up shows that you are still in Phase I infertility.

ii) The most reliable approach for judging the fertility/infertility situation is the internal cervix check. Women say that they feel very reassured of infertility from the evidence of a low, firm and closed cervix, particularly when the external check shows a continual, unchanging mucus symptom.

B) WITH BREAST FEEDING PLUS SUPPLEMENTS (from the 7th month till fertility returns)

With the introduction of supplements (usually at the end of the 6th month) weaning begins; and so breast feeding (and suckling) progressively lessen. A continual milky discharge with dampness is commonly seen once the baby begins to take solids. Less fertile mucus patches can occur. But as weaning comes to an end the mucus patches are more often of the egg white type.

Rules for the avoidance of conception

The principles remain the same : first decide the fertility pattern from the mucus–BBT observations, backed up by the cervix check. Once the pattern is known, apply the rule (given in detail above) that is relevant, e.g. with any mucus patch assume fertility and apply the Peak + 4-day rule.

As weaning comes to an end, the infant breast feeds just once or twice a day. This type of suckling is hardly effective in suppressing ovarian activity. Consequently, as the ovaries gradually begin to function again, long stretches of mucus even of the egg white type may be observed; this will involve fairly long periods of abstinence from the genital expression of love. However, in a loving and mature relationship, both partners seek and discover many ways (both sexual and non-sexual) in expressing love other than through genital union. With patience, love and a sense of humour this phase can be handled easily as has been found in actual practice by so many

couples. Finally it must be noted that this transition period is temporary and that normal cycling will soon return.

C) THE NON-BREAST FEEDING SITUATION (BOTTLE FEEDING)

Begin charting from the third week (Day 21) taking the day of delivery as DAY 1. Once the lochia has ceased you are encouraged to do the internal mucus and cervix observations, besides the using the usual external mucus and BBT checks.

Rules for the avoidance of conception

Abstain for about 2 weeks to determine your pattern of fertility and then apply the appropriate rule for each pattern. If the mucus and cervix checks are negative for fertility, take it that it is Phase I infertility. If the marital act is had, apply the alternate night rule. With beginners (or if it is difficult to interpret the signs) it is best to abstain until the return of fertility and to only use Phase III when it begins. The couple will not have to wait long, since in the non-breast feeding women fertility returns early i.e. very soon after the 7th week and usually by the 12th week after child birth, for most women.

D) PARTIAL BREAST FEEDING

For the purpose of birth-spacing, the same guide-lines apply as for the bottle-feeding situation, given above.

THE BENEFITS OF THE BBT RECORDING IN THE POST PARTUM

There is no doubt that the mucus and cervix checks are the basis for judging infertility and possible fertility in the long post partum period, before normal cycles return. Hence some consider recording the BBT as unnecessary. Yet there are the following substantial advantages in doing so:–

– Many mucus patches occur in the transition period without ovulation taking place. Taking the BBT *periodically* during such patches helps, since the absence of a thermal rise after a patch dries up, confirms that you are still in Phase I; and in addition, the BBT continuing at the low level assures you that conception has not occurred.

– If there is no BBT-rise preceding an episode of bleeding the latter must be taken as fertile (as if it was a mucus patch) and not taken as a true menses.

– A temperature-rise at the end of a mucus sequence assures the couple that Phase III is about to begin and that a true period can be expected about one or two weeks later.

– If the BBT is **not** recorded and conception *does* occur, you will not know when exactly pregnancy took place. But by taking the BBT, the thermal rise will show which mucus patch was tied up with ovulation; and the sustained high temperature level of 18–20 days is reliable evidence that

conception has occurred. Hence BBT recording is recommended. However, there is **no** need to take it daily in the early months of dryness with TBF, but only periodically, e.g. when a mucus or a bleeding patch appears; or whenever a change towards fertility is seen in a pattern of "continual, unchanging mucus."

The return to normal (ovulatory) cycling

The appearance of any vaginal bleeding usually points to the return of fertility though it must be pointed out that (with TBF) the first one or two cycles are often anovulatory (i.e. without ovulation). With ovulatory cycles, there will soon appear a definite mucus flow, followed by the first BBT-rise, which is not as obvious as in normal cycles. Apply the standard "Sympto-thermal rule" to determine the start of Phase III; valuable confirmatory evidence of infertility at this point will be found in the cervix that has returned to its low, firm, closed and dry condition.

The first high temperature phase after child birth is (typically) very short, usually lasting 7 days or less. It takes 3 to 4 cycles for it to return to its usual length of about 14 days.

In a small percentage of women (as stated earlier) ovulation occurs *before* the first bleeding. But no woman need be caught unawares, since almost always it will be preceded by a clear flow of mucus, with a subsequent BBT–rise after its Peak.
With the return to normal cycling, apply the regular rules for each phase. In the first few cycles, regarding using the days in Phase 1, it is best to play safe and not to go beyond Day 6.

WEANING

Weaning is the time when the baby changes from complete dependence on breast milk to living on solid foods only. Once the latter occurs, the weaning is said to be complete.

Since breast milk is the best for the baby for at least the first 6 months of his life, early weaning is, as far as possible to be avoided. Much more is abrupt weaning (e.g. in 1–2 days time) to be ruled out, since it will cause problems both for the mother and for her child.

Hence to the key question : "When should a mother begin to wean her child?" the answer is, at the **pace of the baby**, and not when (well meaning) relatives or friends think it should begin. Normally, the infant begins to show interest in solid foods *around* the sixth month of age. Like an adult, a baby too has his likes and dislikes about food; hence the mother should watch his interests and allow him to take what he likes. Further, she should not be upset if on one day he takes solids eagerly when she offers him, and yet on another day he rejects it and only takes breast milk. We must never forget that the infant has (besides the need for nourishment) an emotional need for security and love which is best catered to through the close and loving intimacy of breast feeding. Hence this factor too comes into play when we say that weaning should be done at the "pace of

the baby." In other words there is no rigid schedule. Though the baby begins taking solids, breast milk should be the major source of nourishment for some time. The time-interval between breast feeds should lengthen slowly; till by the end of weaning he is perhaps nursing just once in 24 hours.

Some babies complete weaning by year one; but most of them when they are about 2 years old. "The process of weaning is done not by looking at the calendar but at the baby (from "The Womanly Art of Breast feeding"). In other words weaning should be a gradual process, done at the pace of the baby, always keeping in mind the emotional need of security through touch that breast feeding offers.

The return of fertility and the type of weaning

For breast feeding to produce the extended state of natural infertility, Sheila Kippley, an authority on this subject says (in her book, "Breast feeding and Natural Child Spacing" p. 54) the weaning must fulfill two conditions. Firstly, it must be a **gradual** process; because if it ends abruptly, the menses will return soon i.e. within 2–6 weeks after breast feeding ceases (p.58 in her book). Secondly, weaning should begin at the **right time**, viz. not before the first 6 months in most cases. Otherwise fertility could return early **even** if the weaning is gradual.

Sheila Kippley and her husband have done a valuable research study to find out when fertility returns with TBF which they call "natural mothering." It showed that with this type of breast feeding (that included gradual weaning), the time for the return of the first menses on an **average** was 14.6 months after delivery. There were a few exceptions; for a few women the first period returned before the 6th month after child birth. While on the other hand, a few others went on for 2.5 years after delivery without a period (p. 63 in her book). This study does show that when the breast feeding is truly "total" and the weaning *gradual*, it can, by itself be an effective means of birth spacing.

Miscarriage When a miscarriage occurs it is obvious that you should contact your doctor immediately.

Many doctors say that there is no medical risk to try to achieve conception immediately after a miscarriage. Nevertheless it may be best to wait for a while before doing so because a miscarriage is an emotionally disturbing experience for the couple. In which case observe and chart your mucus and BBT immediately; all the more since fertility can return rapidly after it, i.e. any time between 2 to 8 weeks after its occurrence. To avoid conception, it is best to abstain from sexual relations until the "Sympto-thermal rule" shows that Phase III has begun and normal cycling has returned.

The role of the father during breast feeding

Though the mother, during breast feeding, is the infant's sole source of nourishment, the father should not be confined to the role of a passive spectator. He has an important part to play by

offering material, and above all, moral support to his wife in the breast feeding situation. It is, when we come to think of it, a continuation of his loving support to her through the long months of pregnancy and also at childbirth. This is not merely his responsibility but his privilege !

There is still much prejudice based on ignorance about the nature and value of TBF. Consequently, the mother will often have to face negative remarks and be pressurised, not only by friends, but also by well meaning relatives to give up TBF much sooner than needed and be forced to introduce solids prematurely lest the baby fails to put on weight. She may even have to hear the remark : "You are starving the child !"

Under such pressure, she may be browbeaten to give up TBF and forced to add a bottle or two, with water or juices, etc., It is here that the husband can give moral support to his wife to continue TBF answer the usual objections, and prevent any interference in this matter. This support will give her great consolation and encourage her to continue TBF. It also brings her peace of mind which is so needed to help her to maintain a good flow of breast milk.

The infant very soon grows to recognise and appreciate the father's presence. Being fondled, spoken to and played with by him, adds its own magic touch of a masculine nature that is irreplaceable. Commenting on the role of the father, a woman, Mary Likens, offers the following rich insight : "The father is not an addendum to the mothering role. The father is a body for baby to feel and explore, a mind to discover, and a person to share a unique relationship with. He develops his own individual role during the breast feeding period, that grows and changes as the motherchild relationship does ("The Womanly Art of Breast Feeding," p. 150).

The early months after childbirth can be very trying for the mother, both as regards time and energy; and so the husband will find numerous occasions to help her out and to give her a welcome break, e.g, he can change diapers, and take over the task of bathing the six-month old, which can turn out to be delightful experience. While she is busy breast-feeding and fully involved in attending to the needs of the new born, he can do the many household chores which she often has no time to attend to. These common tasks appear trivial; however, when done with love by the husband, they bring joy to the wife, and keeps her in a happy mood which is so necessary for a breastfeeding mother.

At the same time, there is another side to the picture. The wife must not be so totally absorbed in the child as to let days and even weeks pass by with hardly a word or look for her husband. Men have often complained of feeling completely "left out" after the arrival of the baby and have even experienced pangs of jealousy. Such a situation must not be allowed to arise. It can be kept well in hand by proper communication between the spouses. The full-time activity of nursing should not make the woman forget her role as a wife. Busy as she may be, she should find the time (even if be for a brief period) to give him individual and loving attention each day.

"The father is a body for baby to feel and explore,
a mind to discover and person to share a unique
relationship with. He develops his own individual
role during the breast feeding period."

For example, it only takes a few moments to give him a loving look and a warm hug; or to say some tender words that flash the message that he is not forgotten. This is (so often) just the little attention the husband is so desperately seeking, and finds so satisfying, specially when he returns home in the evening after a hard day at the office!

In summary, it may be said that one of the factors that helps for a happy and a successful period of breastfeeding, and for the baby to grow up healthy and secure, is a husband who gives his wife every encouragement and active support!

SUMMARY OF THE USE OF SYMPTO-THERMAL METHOD AFTER CHILD BIRTH

The baby's frequent suckling during breast feeding (BF) indirectly suppresses ovulation. This results in a long stretch of natural infertility, particularly when the BF is **total.**

1) Degree of natural infertility after child birth

i) With total breast feeding (TBF)

For the first 12 weeks, chances of conception = nil.

4th – 6th month, chances of conception = very slight.

ii) With BF plus supplements (7th – 12th month)

- With **no** fertility checks and **no** abstinence, the chances of conception = 5.4% (94.6% naturally infertile).
- **With** fertility checks and abstinence, the chances = less than 5.4%.

iii) With bottle-feeding (or partial BF)

For the first 6 weeks, chances of conception =nil.

N.B. The above types of post partum natural infertility occur, **only** if the menses, or other signs of fertility are absent.

2) Signs and circumstances of the return of fertility

When vaginal bleeding (however slight), mucus, specially of the egg white type, or cervix signs appear.

Circumstances : abrupt decrease in suckling, and during weaning.

3) Time when the 1st menses returns after child-birth

- With TBF (6 months) and gradual weaning 6 – 8 months average; for many: one year.
- With partial BF : any time from the 7th week till weaning is over.
- With bottle-feeding : any time between the 7th and 12th week.
- With abrupt weaning : within 2 – 6 weeks after nursing ceases.

4) Rules for the avoidance of conception

A) With **TBF** and **before** the menses has returned :

i) **From the 5th – 12th week**, any days may be used for the marital act. Under these 2 conditions, any mucus seen may be ignored.

ii) **From the 13th – 24th week** (6th month).

When the pattern is :–

a) Dry days : apply the alternate dry day rule.

b) Continual, unchanging mucus (after 2–3 weeks observation) : apply the alternate dry day rule, and use the cervix as a cross-check. With **any** change towards fertility : Peak + 4 – day rule.

c) Dry days plus mucus patches. With the former : the alternate dry day rule.

With the latter : the Peak + 4-day rule.

d) An episode of bleeding : Peak + 4 – day rule.

B) With BF plus supplements (weaning begins)

(7th month and until fertility returns)

The same principles apply; first, determine the type of mucus pattern by observing for 2–3 weeks; and then apply the relevant rule. See A) ii) above. The pattern is usually mucus in patches; and with the start of solids, continual milky-mucus is more commonly seen.

C) With bottle-feeding

Begin charting the mucus and the BBT from Day 21. Once the lochia has ceased, carefully do the mucus and cervix checks. If these are negative for fertility, use the alternate night rule.

For beginners (and if the mucus is difficult to interpret) abstain till fertility returns and Phase III has begun. In the non-breast feeding woman fertility returns very soon after the start of the 7th week post partum.

D) With partial breast feeding

The same guide-lines apply as given under C) above.

5) **Fertility checks :** In the post partum period the internal mucus and cervix checks offer the best evidence of the fertility situation, because the mucus and the BBT patterns are often erratic. Hence, make full use of them as emphasised by veteran NFP teachers like Dr. Flynn, Dr. Roetzer and the Kippleys.

Use of the BBT : In the early months of BF, the BBT need only be taken periodically, i.e. whenever a mucus or bleeding episode occurs; or when there is a change towards fertility in an unchanging mucus pattern. *Daily* BBT recording begins when the first menses or any other sign of returning fertility appears. The BBT remaining at a low level at the end of a mucus patch shows that Phase I continues, and also that conception has not occurred. On the other hand, if it rises after the patch dries up, it means that Phase III is about to begin.

6) **The return to normal cycling**

After the first menses, sooner or later a mucus flow followed by a BBT-rise will be seen, in which case, apply the "Sympto-thermal rule," to determine the start of Phase III. A low, firm, closed and dry cervix is a very reliable cross-check of infertility.

If, rarely, ovulation occurs before the first bleeding, the woman will be alerted to it by flow of mucus that always precedes it.

With the return of normal (ovulatory) cycles, the standard rules of the Sympto-thermal method for each phase will apply.

THE S.T. METHOD IN THE PRE-MENOPAUSE

The basic information concerning the pre-menopause has been given earlier under the Mucus Method.

Rules: The main problems to be faced are irregularity in cycle length, anovular cycles, and bleeding episodes that occur, specially in very long cycles.

Phase I

i) In very long or in anovular cycles, the pre-ovulatory phase becomes very lengthy; here the rules for Phase I apply: use evenings only of alternate dry days. If the day following the marital act is found dry after using the Kegel exercise (see appendix), then it may be used. The cervical signs are particularly helpful to determine (or to confirm) whether you are still in Phase I, or if Phase II has begun.

ii) If a daily unchanging discharge constitutes the BIP, use alternate nights. The usual rule of abstaining on days when *any* change occurs in the BIP, and also for the next 3 days applies. Again, the cervix signs are an indispensable help; hence make best use of them.

iii) Abstain during any episode of bleeding and also for the next 3 days if it is not preceded by a temperature-rise since it is not a genuine menses.

Phase II

Take it that Phase II may have begun, if a) any mucus is seen, or b) if the cervix shows a rise to the "higher" position, is becoming softer, or its os is beginning to open.

Phase III

If there is a mucus sequence and a BBT-shift to a higher level, apply the usual ST-rule to determine the beginning of Phase III. If in a particular cycle there is no proper thermal shift, or the BBT-recordings are missing for some reason or the other, abstain till the 4th day after the last day of more fertile mucus (Peak). If the mucus too, is difficult to interpret then wait till the 5th day after the cervix is back at its "low" position in the pelvis and its os is closed.

THE EFFECTS OF LIGHT ON CERVICAL MUCUS PATTERNS IN THE MENSTURAL CYCLE

By Mrs. Joy DeFelice, R.N., B.S.N., P.H.N., Spokane, U.S.A.

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Since 1976, we have been observing and working with the effects that both artificial and natural light can have on the human menstrual cycle.

Specifically, we have found that any light at night either **shining within or reflecting into** the room where the woman is sleeping, can affect her menstrual cycle and her cervical mucus pattern.

The possible sources of light may be the following:–

i) *In the room:* night light; luminous face of a wall clock; altar lamp; digital clock; bed-room mirror that reflects light etc.

ii) *Reflecting from outside into the room:* bath-room or passage-way light; street light; light from a railway yard or station; head-lights of cars at a busy street corner; moon light will affect the cycle only if it enters directly in a bright way.

If the woman's cervical mucus pattern, as well as the other elements of her cycle are already following the usual hormonal sequence in the menstrual cycle, we just leave the pattern alone even if some light is present at night. We consider light a contributing factor only when we observe the following problems:–

1) **Menses:** Prolonged or a scanty flow. 2) **Mucus:** the beginning mucus is difficult to chart;–there is a stop and start in the mucus build-up; – there is a prolonged fertile mucus span; – if there is only scanty mucus present during the fertile time; – if the Peak is difficult to mark;–if the time between Peak and the following menstrual period is short; – if there is no Basic Infertile Pattern in early breastfeeding. 3) **Cycle:** if the length of the menstrual cycle is very irregular; – if there is irregular spotting (bleeding) within the cycle. 4) **B.B.T.:** if erratic temperatures occur after ovulation.

Procedure: First, we evaluate if there are stress factors and/or nutrition factors involved. Once these are determined not to be the cause of the problem areas, then light factors should definitely be considered.

We then ask the woman to eliminate the light sources at night as much as possible. She needs to sleep in **definite darkness**.

If the problem areas do not disappear with *three consecutive cycles of sleeping in sufficient darkness*, the woman is advised to contact the instructor. There are always individual variations that need to be considered; but in general, eliminating the sources of light at night will usually solve *many, if not all* of the difficulties.

Note : For any clarifications the author of this book may be contacted. The above research findings hold much promise, as shown by the fact that very many women have been helped over the past 12 years, in America. Hence those women who are experiencing any of the menstrual irregularities mentioned above, (after eliminating stress or nutrition as causative factors) are encouraged to try the procedure suggested by Mrs. DeFelice. In the interest of progress in research, the results achieved should kindly be reported to the author.

1) Women with irregular cycles cannot use NFP

This would hold true if the old (now obsolete) "Rhythm method" of NFP was used, in which the fertile days are determined by calculation based on the length of previous cycles. But with the "Mucus" and "Sympto-thermal" methods of NFP, irregular cycles do not affect their reliability. This is because **positive evidence** (the mucus, cervix and temperature signs) is used to determine the fertile days whenever they occur, whether earlier or later than usual in a particular cycle.

2) A busy mother has no time to take daily temperatures

It takes only 3 –5 minutes a day to take the BBT, and like brushing one's teeth each morning, the advantage outweighs any disadvantage. However, it must be emphasised that daily recordings are needed only in the first 6 – 12 months, when the woman is learning her fertility pattern. Preferably, this should be done for about 6 months before the marriage. After this, it need be taken for about 9 days only in each cycle, beginning when the mucus appears and until the 3 higher temperatures have been recorded. Finally, if the woman's mucus pattern is clear-cut, and the reason to avoid conception is not a serious one, she can monitor her fertility by going only by the mucus, following the rules for the mucus method.

3) A whole night's rest is needed to record the temperature which is not possible for a mother with small children.

Strictly speaking only one hour's *rest* is needed to get an accurate temperature record. In fact slight activity, like taking a few steps to go from the bed to the toilet and back has been found not to disturb the temperature record.

4) Women with a daily "discharge" will not be able to identify the cervical mucus

When women are properly instructed they *are* able to detect the mucus when it appears and can identify the changes, inspite of this discharge. The cause of a daily discharge are usually due to malnutrition, lack of iron, or a cervical erosion; all these conditions can be easily cured.

5) A temperature-rise due to illness can be mistaken for that due to ovulation or it may render the chart useless

The rise in temperature due to illness can easily be made out since it is far higher (99° F and above) than that which occurs after ovulation. Besides, it is usually accompanied by other signs and symptoms of ill-health. In actual practice, it has been found that on very few occasions does fever actually destroy the usefulness of a chart. In one study, only 10 out of 1134 charts were spoiled due to illness. It must be noted that NFP does not depend on temperature-recordings alone but also on the mucus and cervix signs.

6) Abstinence is demanded at the time of ovulation when all women feel the maximum sex desire (libido)

Several surveys have proved that this is not true. An English study (R. Hart, British Medical Journal 1960, p. 1023) has shown that 59% of the women experienced libido around the time of the menses; in 34% at no particular time, and 6% at the time of ovulation. A survey of 1000 Italian women showed the following figures : 46.8% experienced it during, or on either side of the period; 34.4% felt desire at no particular time of the cycle; 11.8% felt it at the time of ovulation; and 7% were unclassifiable.

Both studies showed that libido at ovulation was least represented. The probable reason why many (mistakenly) pre-suppose that libido must coincide with ovulation in all women, is because they transfer what is found in lower mammals on to the human level.

7) Since the sexual act could provoke ovulation at times, using NFP could result in an unplanned pregnancy.

On this point an authority on human fertility, Dr. W. Moore has this to say : "The suggestion that in women ovulation may result from sexual stimulation has been copies from book to book without any scientific basis for it. Dr. R. Vollman points out that not a single documented case of coitus-induced ovulation in women has been published in the world literature in the past 100 years, even though the literature is replete with case – reports based on "old-wives" tales."

8) NFP destroys "spontaneity" because the couple cannot have sexual relations during the fertile phase should they feel the urge to do so

Any person in his day to day living will experience a variety of urges, some natural, others accidental, due to different circumstances, e.g. the urge to sleep, to urinate etc., Or he may feel the urge to strike someone who has insulted him; or to abuse another who has arrived late for an appointment; or he may feel the urge to steal, or to drive his car past a traffic signal showing red, to suit his own convenience etc. If any man would give in to all these urges, **immediately** on the basis that he has a right to be "spontaneous" it would surely lead to embarrassing situations and even to a disruption in human relations. In fact, we label such "spontaneous" behaviour as childish because it is inconsiderate.

An African chief told Ingrid trobisch (a Christian missionary) regarding abstinence after childbirth : "A real man is one who can wait. Only a child wants what he wants when he wants it." (From the foreword to the book "Challenge to love" by Mary Shivanandan).

Hence it is **not** unnatural for a person to restrain the physical (spontaneous) urge for genital sex for a good purpose. On the contrary, to keep one's sexual urge under the guidance of reason and love is a sign of maturity.

Some consider NFP as "unnatural" because the abstinence is difficult to practise. First, it must be stated that only some couples experience this difficulty. Secondly, to identify what is

"difficult" as unnatural is incorrect. For example we admire the performance of a skilled musician or athlete. Yet the skill in either case was not achieved overnight, but only as the result of hard work and self-discipline. It certainly was found "difficult" at the start. But anything worthwhile **is** difficult. Consequently, the effort and self-discipline in the use of NFP is also natural and worthwhile.

After a few months of use, couples find the NFP routine soon becomes a habit, which can then be practised effortlessly. In other words, the couple acquires a "virtue" (or strength) that helps them to practise periodic abstinence without any strain. Further, it is the experience of couples that once sexual harmony is achieved, they enjoy an inner peace that is the fruit of the initial period of self-discipline based on their mutual love ! That is why Mother Teresa has called NFP, "Self-control out of love."

The abstinence should not be taken negatively, as merely a "waiting period" during which no communication takes place between the spouses. An NFP-couple testifies to this; "Abstinence does not mean keeping at arm's length. Touching is very important. It is the caressing during the fertile period that develops tenderness." ("Challenge to love" page 30).

A woman said : "I feel so secure and loved. My spouse loves **me** for me, and not as a sex-bed partner. I know this because during our abstinence, he is still loving and faithful and has self-control."

A husband stated: "I used to think that I liked spontaneity. But my wife and I have discovered that love-making is actually better when both plan and yearn for sex."

The key to understanding that this objection is false is to know more about abstinence. Hence a more profound explanation (by Dr. W. Urrichio) of the benefits of periodic abstinence in marriage, **apart from its use in NFP**, is given at the end of this book.

IN CONCLUSION

By way of conclusion, we will consider, a) the effectiveness of NFP methods, b) understanding abstinence, and c) the many advantages of NFP, *apart* from its reliability.

a) MODERN METHODS OF NFP ARE VERY EFFECTIVE

With any family planning method, unplanned pregnancies (U.P.) are classified as "User" or "Method" U.P. The former are due to the user not following the rules e.g. taking chances, or making a mistake in applying the rules; these U.P. occur under real life conditions. The number of "User" U.P. reveals "User Effectiveness", expressed as a percentage. U.P. are listed under the latter, when (for some unknown reason) they occur even though the rules have been faithfully kept by the couple. The number of "method" U.P. reveals the "Method Effectiveness".

Those couples who decide not to have any more children are called "Limiters"; these usually are well motivated, and so keep the rules carefully and never take chances. "Spacers" are those couples who want to delay having a child, but plan to have one some time later. Many of these lack adequate motivation, and so, are careless in keeping the rules and take chances. Hence with Spacers, the number of "User" U.P. is always higher than with Limiters. Thus motivation plays a key role in birth regulation.

NFP methods have been found (beyond all doubt) to be highly effective in helping couples in avoiding conception (and incidentally also in achieving it). However, most people (including many doctors) do not believe this, as there is a lot of prejudice based on ignorance or misinformation. Many still think that the old, unreliable "Rhythm method" of NFP is being advocated. Hence the results of a few research studies on NFP-effectiveness are presented below.

i) "Method" Effectiveness rate (M.E.R.) of NFP

a) **With the Sympto-Thermal Method (STM)**

- The Fairfield (5-nation) Study: There were 9 U.P. in 14,416 cycles, giving a pregnancy rate of 0.74 per 100 women-years (Pearl Index); i.e. the M.E.R. was 99.2%, (Linacre Qrly, 45:4, 1978, p. 388).

- Dr. J. Roetzer's results: For Phase I(Days 1–6), only 1 U.P. in 8,532 cycles. A Pearl Index of 0.14; M.E.R. of 99.8%. For Phase III, **no** U.P. in 17,000 cycles; a M.E.R. of 100% (Linacre Qrly. 45:4, 1978, p. 370).

b) **With the Mucus Method (MM)**

Results of the World Health Organisation (5-nation) Study: Among 725 women (7514 cycles) there were 2.8 method-related U.P., giving a M.E.R. of 97.2%.

II) "User" Effectiveness rate (U.E.R.) of NFP

- The Fairfield Study (for the STM): showed a User U.P. rate of 5.49 (Pearl Index), with a U.E.R. of 94.51%. However, for the *Spacers* taken alone, the Pearl Index was 14.83 thus giving a U.E.R. of 85%.

- The Roetzer Study (STM): showed 12 User U.P. (17,026 cycles). A Pearl Index of 0.8 and a U.E.R. of 99.2%.

For the M. M.: The W.H.O. study showed a User U.P. rate (Pearl Index) of 20.6 and a U.E.R. of 79.4%. For results of other studies of the MM see the Appendix.

Conclusion: For the **STM**, the above and other studies show a **method** effectiveness of 99%. The **User** effectiveness ranges between 85–99%. The lower figure however, is found only among the Spacer-couples. We must point out that this figure (85%) is equal to or higher than the U.E.R. for **any** artificial method (except the Pill), e.g. for the condom, the U.E.R. for Spacers is 79% (see Appendix).

b) UNDERSTANDING SEXUAL ABSTINENCE IN NFP

Since NFP necessarily involves the practice of periodic sexual abstinence during the fertile days, a brief explanation of its true meaning will be of practical value to couples.

A major factor in promoting marital harmony and love in the life of couples using NFP is the role that sexual abstinence plays, paradoxical as this may sound. Those who have used NFP for some time, have experienced that sexual abstinence offers the following advantages :–

When it is practised out of love for the well being and happiness of the spouse, it leads to a deepening of mutual affection and respect. Secondly, it makes the subsequent use of the sexual act more enjoyable both from the physical and psychological points of view. Further, the more genuine and the deeper is this love that each partner brings to the sex act, the greater will be their sexual satisfaction. "The act", says Dr. C. Rendu (a pioneer in the field of NFP) "instead of being the quenching of a desire (more or less violent for one or other partner), tending to be rapid, mechanical and automatic, takes on a new significance for them. It becomes a privileged moment, filled with meaning !" Through sexual abstinence, both husband and wife come to realise that it is the **quality** of the sexual act (as an expression of their total self-giving) rather than merely its frequency that plays a major role in determining whether the sexual relationship will be a happy one.

Thirdly, during the abstinence-days, the spouses seek and discover many other ways (non-sexual and sexual) to express love, which often does not occur to them during the infertile days. Thus new channels of communication are developed that strengthen the relationship and deepen the intimacy between husband and wife ! Lastly, it helps to prevent waning of desire. Human nature can take for granted and get bored with any physical pleasure which is unchanging, and

the physical sexual act is no exception. The abstinence makes marital hearts grow fonder ! This is corroborated by a study of NFP-users of all faiths, in Mauritius, by a Jesuit sociologist, Fr. F. Madigan. This study showed how the "abstinence out of necessity soon changed (for these couples) to an abstinence out of choice." Further, they spoke of its "spiritualising effect" on their marriage.

On the other hand, some couples will find that achieving sexual harmony **is** difficult and that it cannot be reached overnight. But its success is assured and its practice made easy when it is (**with the support of prayer**) motivated by the most powerful force husband and wife possess – true love ! Love means **to give**, **to serve**. A person who truly loves forgets his (or her) own needs, even at great sacrifice, in the interest of the beloved. It must be emphasised that the physical sexual act though good in itself, is **not** love, but only a **means** that husband and wife have of expressing it. Hence, for example, if the husband finds that having the sexual act on a particular day would probably result in an unplanned pregnancy, but the physical urge for it is strong, then in these circumstances, love would be expressed better, by abstaining from it, because true love means to place the happiness of the one loved before one's own needs and desires. The following true incident in the life of a couple (using NFP) well illustrates the power of love in achieving sexual harmony :

On a particular occasion, the wife was feeling sorry for her husband because the long abstinence involved was causing him (she thought) much strain. But to her surprise and delight he replied : "Don't worry my dear. I love you too much, too much even to desire you !" This incident brings out the true meaning of periodic abstinence in the use of NFP. When motivated by love it becomes not a giving up, but a **giving to**, i.e. a beautiful and an authentic expression of love! Understood in this way, the practice of abstinence in the use of NFP will surely enrich the marriage !

c) THE POSITIVE ADVANTAGES OF NFP

NFP has all the qualities of a good family planning method, viz. it is morally acceptable, reliable both in the avoidance and achievement of conception, medically safe, reversible and cheap. It can be used by people of any level of education and by women in any situation e.g. with irregular cycles, during breast feeding, in the premenopause etc.

But what is unique to NFP (and not seen with contraceptives) is that its use helps to restore or deepen marital love and respect between husband and wife ! Further, NFP couples report that the relationship with their *children* and with friends is enriched. The following scientific survey (one of many) and some personal testimonies of couples will serve as evidence for these remarkable advantages that NFP offers, apart from its effectiveness (taken from the book "The New No Pill, No Risk Birth Control") :

A) Survey : Out of the 250 men and women who were interviewed, 93.5% rated NFP **positively**, as "moderately satisfactory, satisfactory, or highly satisfactory." In contrast, the positive rating for contraceptives was only 33.4%. In the "highly satisfactory" group, the percentage for NFP was 74.5%, while only 10.6% rated contraceptives as highly satisfactory.

B) Personal testimonies to :

1. Promoting closeness between husband and wife

- A woman married for 11 years states : "We were always a close couple. But I can't believe how much closer we've become in the last 3 years since we started fertility awareness. In fact my husband told me that he feels we've grown more intimate during the past 40 months than during all the previous years of our marriage. I agree."

- "Our marriage "began" and bloomed 100% after we started using NFP. We felt closer to God and this helped our marriage. We had phases of courtship and honeymoon and celebrated. We shared my body awareness. We shared days of uncertainty and we shared days of gambling and pregnancy. It was a change from "I" to "We."

2. An improvement in the sexual relationship

- "I was terribly flattered to realise that my wife enjoyed relations with me so much. For years I had been grateful for always responding to my "request" for intercourse. But after 28 months of using NFP, we finally see intercourse as something that we share and give to each other. She gives to me; I give to her."

- "When we have intercourse, my husband is more affectionate, tender and gentle. I don't feel "used" any more, and I know he doesn't take advantage of sex and me."

Dr. Mary Robertson, sociologist : "The deeper bond of mutuality and commitment fostered between parents by their use of NFP, not only dramatically improves the marital relationship, but it also makes it easier to rear children. It is a subtle thing, but it's a very real thing. The children sense the commitment of the parents to each other and to them."

NFP-couple Thecla and Desmond Mathias with their children Sean & Celeste

3. **Better communication between husband and wife**

- "The effects on our marriage have been good. NFP has forced us to communicate. We "grew up" so to speak taking responsibility for our drives."

- "When we started using the method, we really had to discuss a lot of new things. At first I was'nt sure how to interpret the changes in my mucus. We discussed that. Soon we were discussing how seriously we really wanted to avoid pregnancy. This came up especially during the times abstinence was particularly difficult for one or both of us. In fact we discussed the abstinence problem very extensively – how to cope creatively with sexual tension. We also planned how to enjoy intercourse after the abstinence period and our physical relationship took on a special excitement. We had never talked about this so intimately, so personally or in such detail until we started using natural birth control."

4. **Abstinence enriching the marital relationship**

- "Strange as it may seem, the abstinence has had a positive effect on our marriage. I feel that my husband has to love me deeply in order to abstain."

- "My wife and I have romantic memories of the abstinence periods. We have almost no romantic memories attached to the 7 years she was on the Pill."

- A woman who has used NFP for 15 years to avoid pregnancy says : "I have never felt more loved than during the time of abstinence, even during the act of intercourse. When the wife knows the husband's restraint is for her benefit it makes her feel like a queen." (From the book "Challenge to Love" p. 31)

5. **A better and mature relationship with others**

Because the use of NFP deepens mutual love and maturity, the marital bond between husband and wife is greatly strengthened. Consequently, either spouse can relate to others in a mature, healthy manner without causing anxiety or jealousy. Nancy and John Ball ("The Joy of Human Sexuality" p. 46) say : "A husband does not become suspicious of his wife's caring for another man. He knows of her conjugal commitment to him and has experienced trust in her. He understands his wife's relationship because he too, experiences the same type of relationship with other women."

What is the "secret" as to why NFP alone, among all family planning methods leads to these striking benefits to the marriage and the family life ? It is because NFP involves a whole new approach to birth regulation, in which an interplay of the following factors are responsible.

i) The knowledge gained (through the use of NFP) of the wonderful way the procreative power functions helps each spouse to grow in self-esteem, to an appreciation of his or her fertility, and an increase in mutual respect.

ii) Fertility is now seen, not as "hers" but "ours" and as something to be understood (fertility awareness), respected (fertility appreciation) and lived with, in a spirit of awe and gratitude, rather than taken as a "disease" to be treated medically with drugs and devices.

iii) The periodic abstinence challenges the couple to express their love in other ways than genital union. This necessarily demands an on-going dialogue and decision-making about the place and the role the sex act should have in their relationship; sex and sexuality which was perhaps never really spoken about, is now thoroughly discussed.

The result of all this, is something very precious — a deepening of communication, intimacy and love between husband and wife ! Thus, from the above explanation we see, why couples say that NFP is not just the observation and charting of the fertility signs, but a "way of life" in which they live **in tune** with their fertility and for which they are jointly responsible, in a **shared** commitment.

That NFP is not just a "method" to avoid conception but a way of life in which the true meaning of marital love and intimacy is discovered, is well brought out in the following touching testimony of a French woman :

"After the birth of our fourth child, we decided to use contraceptives. This seemed to be the only sure solution to our problem. But now we have realised that we have found in NFP a better method than contraceptives. Though the latter gave us security, we found them very unsatisfactory. But this present way is **much more than a "method"**. We have discovered the place that the sex act should have in our love; it becomes a true and a total self-giving. Do not think that we do not have our difficult times, and that we have not been tempted to give up. But our great support is the strength of our conviction that we must not tarnish our love, now that we have discovered its true dimensions. We are beginning to realise a little, the fullness of a love in which most surely God is present . This has been a turning point which has affected every part of our life. But you have to live all this to understand it." (From "Training the couple" by Dr. C. Rendu).

Thus, in conclusion, we would like to emphasise that NFP (apart from its reliability) is far superior to artificial family planning methods. This is because it is (we repeat) not merely a reliable "method" that couples use to regulate births, but the adoption of a way of life that respects fertility and one that enriches the marital relationship !

So many couples take to contraceptives because they are unaware of NFP, or are misinformed about it. Hence the great need to spread the "good news" of NFP to couples of all faiths. May this book help towards this end.

APPENDIX

THE SIGNIFICANT BENEFITS OF PERIODIC ABSTINENCE IN MARRIAGE

By Dr. W. Urrichio, President, International Federation for Family Life Promotion

Note: Periodic sexual abstinence in the use of NFP. is commonly cited as a "disadvantage" of the method. Hence this special article by Dr. Urrichio is presented to refute this charge. He shows with precision how it enriches the marital relationship in many ways, *quite apart* from its use in NFP. Married couples will gain much in reading and re-reading the following lines.

If a marriage is based not on love, but on sex, then periodic abstinence will be experienced as a threat to the marriage. And if intercourse is the only repeated expression of love, its expressive power gradually decays (like radio-activity), and love's expressive power is *reduced to one channel*, one habit. The inability to love fully and comfortably is a major problem in many marriages today because too much focus is put on orgasm and sex goals, and *not enough on love* !

It is physiologically false to say that frustration and anxiety will result from abstinence; nothing will happen to you if you don't have intercourse, as compared to what will happen if you don't get food, air or water. Conversely, physical sexual gratifications do *not* of themselves, lead to fulfillment.

Periodic abstinence requires self-control and sacrifice with a view to personal gain above and beyond a family planning "method." When a couple deliberately chooses periodic abstinence, for a good reason (e.g. to avoid a pregnancy by abstaining during the fertile days), it is a *positive value*, and transforms what might otherwise be seen as a frustration.

Practising periodic abstinence out of devotion to one's spouse, is worth all the "sacrifice" and more, – the rewards of the sacrifice being greater than the gratifications of sex.

Periodic abstinence gives time to refuel, to re-discover new dimensions of response in love, which benefits all the times of marriage, bringing into play intimacy, tenderness, in a fuller type of loving self-expression that is more eternal, more permanent.

Love, directed away from its usual channels of genital expression, finds new capacity for courting, romance and careful attention.

If periodic abstinence is consciously chosen, it enhances the emotional and sexual aspects of marriage, and creates a harmony of love, life and truth, teaching the couple about themselves as sexual beings, and showing them that *love is greater than sexual pleasure* ! It removes the focus from sex, to explore love without boundaries, specially in the area of *non-genital touching*. Touching is a silent voice avoiding the pitfall of words, expressing feeling and causing comfort and security. Everyone needs it, specially women. Learning to touch non-possessively, *without* leading on to intercourse yields a more subtle flow of energy, a surrender in love in which tenderness grows !

NATURAL FAMILY PLANNING : JUST A "METHOD" OR A "WAY OF LIFE" ?

Natural Family Planning (NFP) is a "method" that can be used to avoid conception. However, it differs fundamentally from other family planning "methods" in several ways.

Firstly, in that, its use (to regulate birth) does not depend on any artificial device or the use of potent drugs etc., but lies in the mind and heart of both the spouses viz. – in their joint decision.

Secondly, in that, it can be used not only to avoid a pregnancy, but also to achieve one.

Thirdly, its use brings out the finest qualities in man – responsibility, self-restraint, considerateness etc.

Hence, it will benefit those beginning to use NFP to try to appreciate that it is not merely a birth prevention "method" that they adopt, but far more – a "way of life" a term coined by married couples themselves the world over. Both these aspects are explained below :–

1) N.F.P. AS A "METHOD" OF BIRTH REGULATION

As a "method" it can be defined as :–

The determination by the *couple* of the fertile and infertile phases of the menstrual cycle, by watching for the presence or absence of the natural signs of fertility (mucus, temperature – rise etc.,); the knowledge of which can be used either to **achieve** or **avoid** conception. For the latter purpose, genital abstinence during the fertile days is essential to the method.

2) THE TRUE MEANING OF N.F.P. : "A WAY OF LIFE"

Because the use of NFP leads the couple to :–

an appreciation of how their procreative power functions;

discover many ways to express love other than genital union, specially during the fertile days;

a realisation that their power to achieve or avoid conception depends entirely on their joint decision;

a deeper communication and intimacy;

the appreciation that love and not instinct should guide their sexual relationship,

husband and wife come to realise that NFP is not merely a reliable "method" or "technique" to avoid conception, but a **way of life** that involves both of them intimately; that helps them to accept and respect their fertility as a priceless gift; and one that enriches their marriage!

I. FACTORS THAT MAINTAIN A HEALTHY MUCUS FLOW

i) Good Health Habits

An abnormal mucus pattern e.g. a daily discharge, has very often been traced to poor health and hygienic habits. Hence, to maintain a healthy mucus sequence pattern, and in general, to have a healthy clean reproductive tract, the following points must be kept in mind. Bathe regularly, using a mild soap for the genital area. Whenever you check for the mucus use white unscented tissue and wipe from front to back, across the vaginal entrance.

Synthetic (nylon) underwear does not absorb moisture and so can precipitate a local infection. Hence, it is preferable to use cotton ones as these "breathe' more easily. Avoid wearing tight jeans or skin tight shorts or slacks. If a panty hose is worn, use those with a cotton crotch, but a study has shown that those who did not wear a panty hose at all, had the least problems with a daily discharge. The reason is that all these types of apparel do not allow for good ventilation.

Do not use deodorants, sprays, lotions and scented toilet paper, as these are known to irritate the delicate tissue of the genital area and the vagina, and so lead to an abnormal vaginal discharge. The vagina cleanses itself and hence these toilet preparations are not needed; neither is vaginal douching necessary unless advised by a doctor for a specific problem.

Toxic Shock Syndrome (TSS)

The commonest cause of TSS is the use of tampons during the menses. The symptoms are vomiting, diarrhoea, sudden high fever, severe body ache, skin rash and giddiness. Prompt medical treatment can cure TSS. It is best to avoid using tampons, or at least to use them restrictively, e.g. use them only in the day time on the days when the flow is heavy and change them every 4–6 hours. At night, the usual external pads should be used.

ii) Adequate Vitamin Supply

In general, vitamins (specially Vitamins A & B Complex) enhance mucus production. Women who have a poor mucus flow are recommended to eat the following foods rich in Vitamins A & B Complex.

Vitamin A Rich Foods

a) **Vegetable Sources** : Carrots, tomatoes, red pumpkin, green leafy vegetables, mangoes, papayas, etc.

b) **Animal Sources** : Milk, butter, eggs, liver and fish.

Vitamin B Complex Rich Foods

a) **Vegetable Sources :** Peas, beans, green leafy vegetables (spinach), cauliflower, turnip, carrots, potatoes, pulses, whole grain.

b) **Animal Sources :** Eggs, liver, kidney, meats, milk, fish and yeast.

iii) Adequate rest.

II. DRUGS THAT MAY AFFECT THE CERVICAL MUCUS

Experience has shown that quite a few drugs affect the flow of mucus either way, hence it is important to note on the chart the drugs that are being taken for any ailment. Here is a list of those drugs and their effect on the mucus :

- **Anti-histamines :** Any medication containing an anti-histamine is found to decrease or dry up the mucus, e.g. Benadryl, Avil, etc. It is important to drink sufficient water when taking anti-histamines; otherwise the drying-up effect of these drugs is increased. Other drugs used for colds, travel sickness, allergies and for ulcers can also decrease the amount of mucus. Medications called diuretics that are given to those suffering from high blood pressure to increase the excretion of urine have the same effect on mucus secretion like the anti-histamines.

- **Guaifenesin :** Cough syrups containing this ingredient are found to increase mucus production and to liquify it, e.g. Asthalin. A foreign expectorant called 'Robitussin' which contains guaifenesin only, when taken from Day 6 of the cycle and until peak-day, has been found to produce a good mucus flow. It thus helps to increase the woman's chances of conceiving, should she have a scanty mucus pattern.

- **Antibiotics** : These may increase the mucus and also predispose the women to develop yeast infection locally, causing a daily discharge.

- **Steroids :** e.g. Cortisone or the birth control Pill can cause irregularities in the menstrual cycle. The Pill (like antibiotics) can also cause a local yeast infection.

III. THE EFFECT OF STRESS, MALNUTRITION AND LACK OF SLEEP

Physical and/or mental stress, malnutrition or a lack of adequate relaxation or rest (specially at night), can all cause the following irregularities in the cycle :

i) Irregular cycles that are often associated with a shorter Phase III (post-ovulatory infertile phase).

ii) Mucus patches that come and go without leading upto a true peak and ovulation (as shown by absence of a thermal rise). In other words, there are repeated delays in the process leading upto ovulation.

iii) A prolonged discharge, often resembling egg-white mucus, that even continues well into Phase III.

When a woman complains of any one or more of the above problems, a careful check must be made about her daily routine and food habits. If she is under any stress (mental or physical) practical means must be taken to eliminate these as far as possible. She must also check to see that she gets enough sleep at night and to take some time off in the day for some relaxing activities or hobbies of her liking. Finally, she must see that she has a balanced diet. In these circumstances and particularly if the stress situation is serious one that cannot be eliminated completely, the loving support of her husband and recourse to prayer are essential. On the other hand, it has been found at times, that ovulation has been delayed even when no noticeable stress was present.

Finally, it must be noted that many women even though they experience an abnormal discharge, are still able to detect cervical mucus when it appears.

In the post partum period, women may experience a continual discharge which is commonly due to a cervical 'erosion.' This can be easily cured with simple treatment by a gynaecologist.

THE KEGEL EXERCISE FOR THE MUSCLES OF THE PELVIC FLOOR (WITH REFERENCE TO NATURAL FAMILY PLANNING)

(Courtesy of the "Twin Cities N.F.P. Centre" Minneapolis, U.S.A.)

The pelvic floor muscles (Fig. 45) are several layers of muscle surrounding the urethra, the vagina and the anus. This hammock-like muscle structure provides support for the pelvic organs and their contents. Dr. Arnold Kegel formerly of the University of Southern California School of Medicine, originally developed the exercise of the pelvic floor muscles as treatment for women suffering from urinary stress incontinence. This condition refers to the involuntary passage of urine brought on by exertion such as coughing, sneezing or laughing.

Kegel Exercise before and after childbirth

Currently, Dr. Kegel's exercise is widely taught in childbirth classes to improve elasticity in the pelvic floor muscles for the birth process. Following childbirth, the Kegel Exercise aids healing of the episiotomy incision, eases discomfort and facilitates rapid return of muscle tone.

Kegel Exercise and N.F.P.

Women using natural family planning will find strength and muscle tone in the pelvic floor beneficial in additional ways:

1. **Sensation**

Women who have difficulty determining sensation when wiping with the tissue at the vaginal opening can improve their ability to distinguish the difference between dry, slippery, moist and the 'nothing felt' sensations. Improved muscle tone increases the ability to 'feel'; an awareness not provided by a sagging pelvic floor.

2. **Seminal Fluid**

After the marital act, seminal fluid becomes a vaginal discharge for the woman. The characteristics of seminal fluid are often similar to peak mucus and can be observed the day following the marital act. Since any discharge from the vagina must be evaluated on the basis of its characteristics, the presence of seminal fluid may result in unnecessary abstinence. The Kegel Exercise helps to avoid confusion between seminal fluid and the presence or absence of mucus on the following day. Repeated contracting and release of the pelvic floor muscles, followed by 'bearing down' as in forcing urination or giving birth, eliminates residual seminal fluid when done within an hour following intercourse.

Kegel Exercise and the Marital Act

All couples will appreciate the increased physical enjoyment during genital intercourse provided by consistent practice of the Kegel Exercise. As the strength and thickness of the pelvic floor muscles increase, the vagina becomes more snug. Sensations experienced in the vagina during the marital act come primarily from nerve endings in the muscles beneath the vaginal wall. The degree of physical response is directly related to muscle tone.

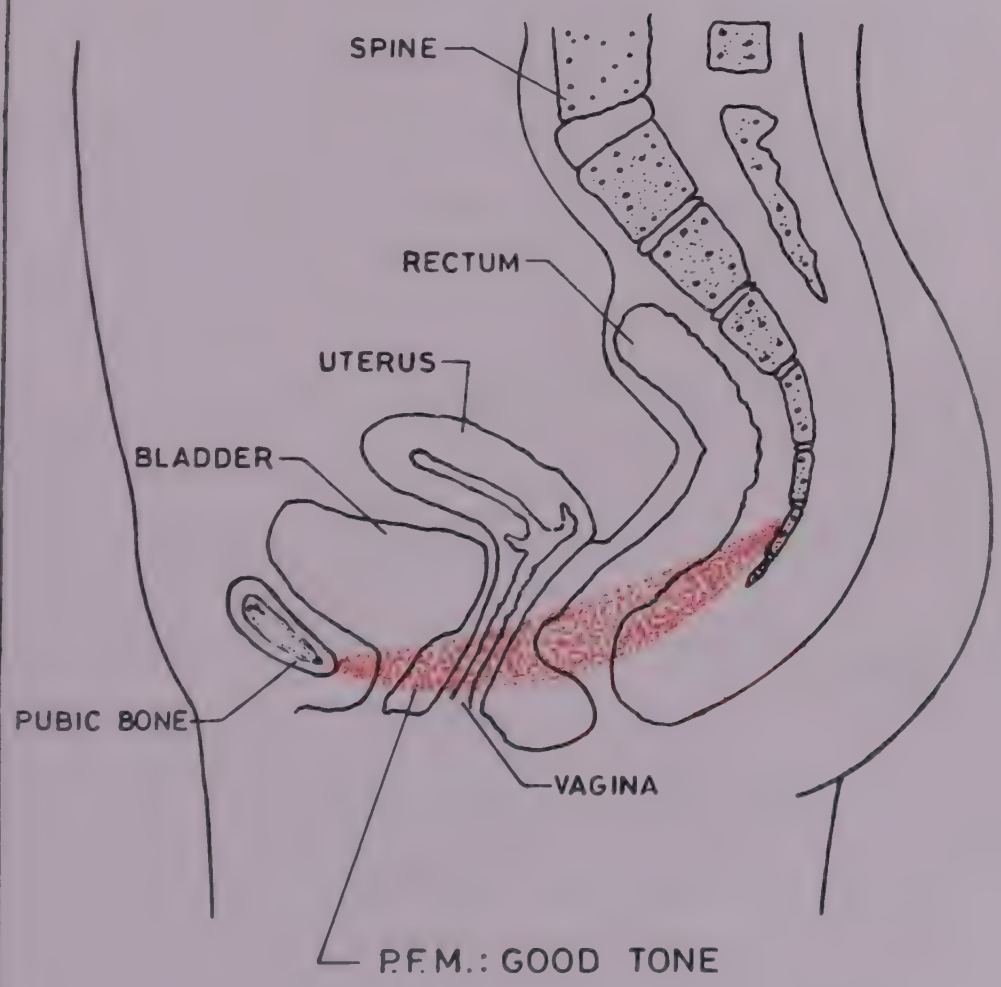
Several different approaches can be used to tone and strengthen the pelvic floor muscles :

Method 1 : Lie on side, back or front. Keep the knees apart and continue breathing normally. Slowly, contract the muscles around the urethra and vagina. Hold for a few seconds, then relax. Repeat, also contracting the area around the anus. Hold, then release from back to front. Repeat entire process two times.

Method 2 : Sit on the toilet, knees apart, leaning forward slightly. While urinating, completely stop and start the flow of urine several times. This technique helps identify the specific muscle groups at work in the Kegel Exercise.

Method 3 : Think of the pelvic floor as an elevator. Slowly tighten and raise the layers of muscle to a smooth count of five, ascending from the 'ground floor' gradually to the 'fifth floor.' Hold for a count of five, then slowly "descend the elevator ' by a smooth release of muscles, thinking of each floor on the way down. Proceed to the 'basement' with total muscle release, then release even more, bulging out the muscles of the perineum, 'bearing down.' Slightly lighten the muscles again, returning to the "ground floor" for normal support of internal organs.

Note : Method 3 is the most convenient way to do the Kegel Exercise since it can be done at any time or place without anyone being aware, e.g., while doing any household work such as ironing clothes, etc., or simply when the woman is standing erect. However, there will be occasions when the other two methods can easily be practised.



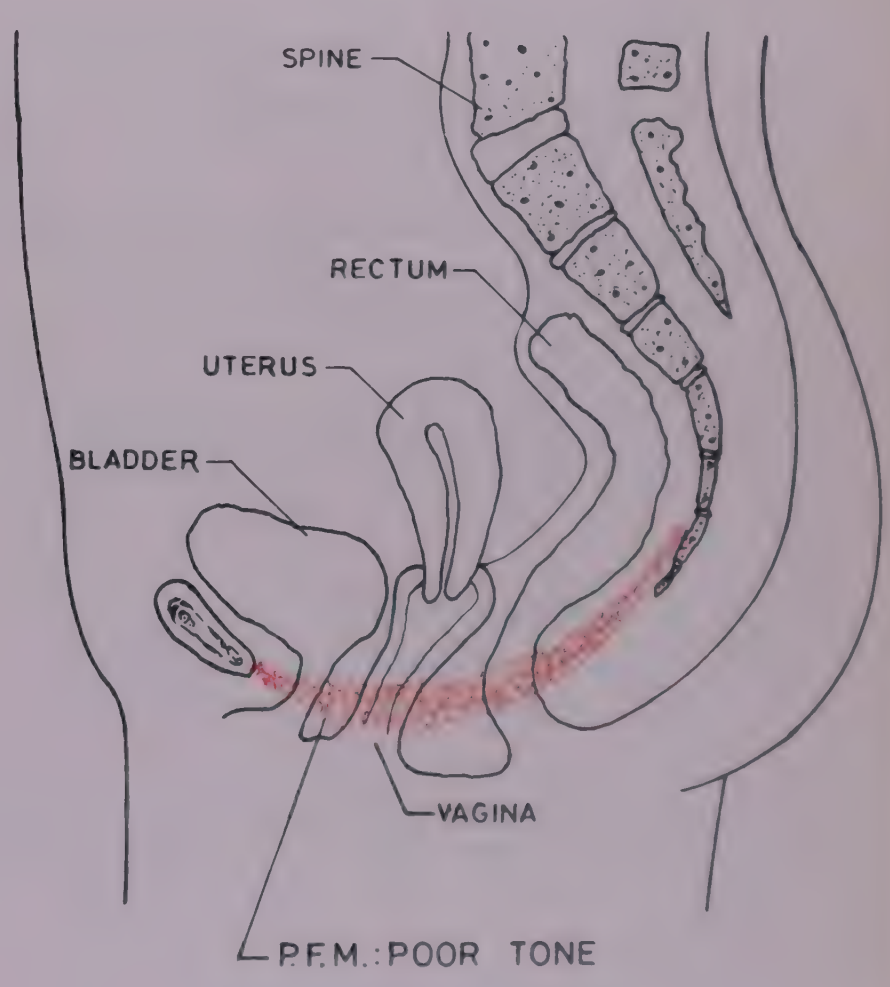


Figure 45 PELVIC FLOOR MUSCLE (P.F.M.)

PREGNANCY RATES OF FAMILY PLANNING METHODS

	Unplanned pregnancies (U.P.) (Pearl Index)	Effectiveness rate in %
A) MODERN NATURAL METHODS		
1) **SYMPTO-THERMAL METHOD** (S.T.M.)	– 0.8%	– 99.2%
a) Dr. J. Roetzer's Centre* (491 couples; 17,026 cycles)		
b) Drs. M. Barbato & G. Bertolotti** (460 couples; 8,140 cycles)	– 3.6%	– 96.4%
2) **MUCUS METHOD** (Billings)		
a) Bangladesh Study** (416 couples; 2358 months)	– 7.2%	– 92.8%
b) Mysore-Hyderabad, India* (179 couples)	– 4.7%	– 95.3%
3) **MODIFIED MUCUS METHOD**+ (1977 urban-slum couples)	– 0.39%	– 99.61%

Note : It is important to know that with the S.T.M., both Dr. Roetzer & Drs. Barbato & Bertolotti got **no** U.P. in Phase III, i.e. 100% effectiveness.

	Unplanned pregnancies (U. P.) (Pearl Index)	Effectiveness rate in %
B) ARTIFICIAL METHODS++		
1) **SURGICAL METHODS**		
a) Male sterilisation (vasectomy)	– 0.2 – 0.5%	– 99.5 – 99.8%
b) Female sterilisation (tubectomy)	– 0.2 – 1.0%	– 99.0 – 99.8%
2) **BIO-CHEMICAL METHODS**		
a) Oral contraceptives ("Pill")	– 1 – 8%	– 92.0 – 99.0%
b) "Mini-Pill" (progestin only)	– 3 – 10%	– 90.0 – 97.0%
c) Intra Uterine Device ("Loop")	– 1 – 5%	– 95.0 – 99.0%
3) **BARRIER METHODS** (mechanical)		
a) Condom (nirodh)	– 3 – 15%	– 85.0 – 97.0%
b) Diaphragm	– 4 – 25%	– 75.0 – 96.0%
4) **VAGINAL SPERMICIDES** (acidic)		
a) Foam tablets, jelly, cream	– 10 – 25%	– 75.0 – 90.0%
b) Vaginal sponge (e.g. "Today") (spermicide + barrier)	– 15 – 30%	– 70.0 – 85.0%
5) **INTERRUPTED INTERCOURSE**	– 10 – 16%	– 84.0 – 90.0%
6) **VAGINAL DOUCHE** (wash)	– 21 – 37.8%	– 62.2 – 79.0%

* "The best of N. F. P.", p. 135 (Human Life International, 1980)

** Int. J. Fertility, Supplement, May 1988 (1, b : p.48; 2, a : p.52)

\+ Dr. K. Dorairaj, "Fertility Control in India" 1981 (2, b : p.95; 3 : p.94)

++ "Population Crisis Committee", Washington D.C., U.S.A., 1985

EFFECTIVENESS OF FAMILY PLANNING METHODS (FPM) FOR "LIMITER" AND "SPACER" COUPLES

Terminology :

- "**Method (or theoretical) effectiveness**" : the effectiveness of a FPM when taught correctly and used exactly according to instructions.
- "**Use (or practical) effectiveness**" : the effectiveness of a FPM in real life situations, e.g. taking chances, forgetting instructions, faulty teaching, carelessness, etc.
- **Pearl Formula** (P.F.) is used to judge the effectiveness of any FPM :

$$\frac{\text{Number of pregnancies}}{\text{Number of cycles}} \times 1200 = \text{Number of pregnancies per 100 women–years.}$$

- **Limiters :** Couples who have *explicitly* decided, together, not to conceive another child for the rest of their lives. They are known to consciously work *together* to achieve this goal. Hence, they observe and chart the fertility signs and follow the rules carefully and consistently.

- **Spacers :** Couples who do not wish to conceive a child *for the present*, but plan to have one at some time in the future. Such couples often do not verbalise (to each other) about having another child or not. They often lack a seriousness about avoiding conception at the present moment; and so are very likely to be careless about charting their fertility signs and keeping the rules.

Pregnancy rates for "Limiters" and "Spacers"

		Pregnancy rate per 100 users per year (P.F.)	Use effectiveness in %
1)	Sympto- Thermal method*	Limiters : 1***	99%
		Spacers : 16	84%
Artificial methods**			
2)	Oral contraceptives ("Pill")	Limiters : 4	96%
		Spacers : 7	93%
3)	Intra Uterine Device (I.U.D.)	Limiters : 5	95%
		Spacers : 15	85%
4)	Condom	Limiters : 10	90%
		Spacers : 21	79%
5)	Diaphragm	Limiters : 10	90%
		Spacers : 25	75%
6)	Foam Tablets	Limiters : 22	78%
		Spacers : 36	64%

* P. Carreau, Lanctot & Rice – 1976.

** N. Ryder : "Contraceptive failure in the U. S." in "Family Planning Perspectives", Summer 1973.

***N. B. :–The 1% pregnancy rate for the Limiters, in contrast to 16% for the Spacers clearly shows that motivation is the key factor that makes the difference in the results.

THE MORAL ASPECT OF FAMILY PLANNING METHODS

Basic principle : Man was created by God and so is obliged to do His will. When a man's actions are in accordance with God's will, they are said to be moral; if done contrariwise, they would be labelled immoral. Being a creature, man is not absolute master of his body but its *steward*. The power of transmitting life through the use of the sexual faculty is a priceless gift. Therefore it stands to reason that man must use it according to God's plan or will.

The purpose of the marital act (M.A.) is simultaneously, two-fold : "Unitive" and "procreative".

Unitive : The M.A. is meant to be an expression of love that a husband and wife have for each other, and of the permanent commitment they made on their wedding-day.

Procreative: This act is also ment to generate new life. These two purposes are *God-given* and man as a steward of life, has no right to frustrate either or separate them.

The morality of family planning methods

With the artificial methods there is a deliberate, positive interference before, during or after the M.A. meant to nullify its procreative purpose, either mechanically (condom, diaphram or with interrupted intercourse); chemically (spermicides); hormonally (Pill), bio-chemically (I.U.D.) or surgically (vasectomy or tubectomy). Some low-dosage Pills and most probably the I.U.D. act as abortifacients.

On the other hand, with NFP, all that the couple do (in order to avoid conception) is **not** to have the sex act (i.e. to abstain) during the fertile days. This abstaining from it, is an act of **omission**, which is morally justified, when a **valid** reason exists e.g. medical (illness of the wife) or economic (lack of money to rear another child) etc. Further, with NFP, whenever the sex act is had, it is had in the normal way without any interference of its procreative potential. Incidentally, that is why one woman (a Hindu) said : "I like this method because it respects my body". In other words, with NFP, man acts in harmony with his body and not against it.

Thus, we consider artificial methods immoral, and NFP–methods as moral. For a more detailed explanation of this topic the reader is advised to consult "On human life" by Pope Paul VI.

HAZARDS AND COMPLICATIONS OF INDUCED ABORTION

Most women undergoing abortion are not informed of the dangers involved for themselves in the abortion procedure, and are often unaware that innocent human life is destroyed.

Abortion is claimed to be a safe and simple procedure. But the increasing frequency of reports in medical literature concerning complications of abortion indicate that this is not always frue. Serious complications can occur even in early abortions.

Women who have undergone an abortion can and do suffer from :

1. **Immediate Complications**

- Infection*
- Haemorrhage*
- Damage to the cervix*
- Perforation of the uterus*
- Abdominal pain, menstrual irregularity, headaches and giddiness, blood clots
- Death

* Can endanger future pregnancies

2. **Future Complications**

- Ectopic (Tubal) pregnancies
- Still birth and miscarriage in future pregnancies
- Sterility (inability to conceive)
- Premature birth in subsequent pregnancies (the leading cause of mental and physical retardation, cerebral palsy and death in newborns)

3. **Mental and Emotional Disturbances**

Dr. Julius Fogel (an obstetrician-psychiatrist) says :

"It is not as harmless and casual an event as many in the pro-abortion crowd insist; a psychological price is paid. It may be alienation, it may be a pushing away from warmth, perhaps a hardening of the maternal instinct. Perhaps something happens on the deeper levels of a woman's consciousness when she destroys a pregnancy. I know this as a psychiatrist."

GLOSSARY OF TERMS

Anus : the outlet of the rectum.

Anovular (anovulatory) : without ovulation; refers to a menstrual cycle when no ovulation occurs.

Bartholin's glands : two round vulvo-vaginal glands that secrete a mucoid liquid during sexual excitement meant to lubricate the vaginal entrance; counterpart of Cowper's glands in the male.

Bladder : a musculo-membranous sac situated in the pelvic cavity which serves as a reservoir for urine, before it is excreted through the urethra.

Basal Body Temperature : the temperature of the body at rest, usually taken immediately on waking up in the morning, before any exertion.

Calendar Method : a natural family planning method, (now obsolete) in which the fertile days in the menstrual cycle are determined from the length of previous cycles; also called "rhythm method."

Cervix : a latin word for 'neck'; the lower, narrow part of the uterus.

Cervical Crypts : pockets of cells that line the canal of the cervix, which secrete a fluid called mucus.

Cervical Mucus : A fluid secreted by the cervical crypts which is meant for sperm survival and transport.

Climacteric : the period in a woman's life when her reproductive function is slowly decreasing.

Coitus : the penetration of the vagina by the penis and the deposition of semen into it (also called sexual intercourse or sexual act).

Copulation : same as coitus.

Conception : union of the sperm and the ovum; the moment when pregnancy begins.

Contraception : the practice of using mechanical, chemical, bio-chemical or surgical procedures meant to prevent conception.

Corpus Luteum : see yellow body.

Clitoris : a tiny erectile body of the female external genitalia; the counterpart of the penis in the male.

Cowper's gland : two pea-sized structures situated just below the prostate gland at each side of the base of the penis. With the sperm sacs and prostate it is part of the accessory sexual organs in the male.

Completely Infertile Part: those days of the post-ovulatory phase of the menstrual cycle when conception is not possible.

Condom : a contraceptive device placed over the erect penis to prevent the sperms from being deposited in the vagina.

Diaphragm : a mechanical contraceptive device inserted into the vagina covering the cervix to prevent the sperms from entering the uterus.

Douche : a stream of water directed into the vagina to wash it out.

Eggwhite mucus : cervical mucus which is clear, slippery, thin, stretchy, and producing a wet sensation.

Ejaculation : the spasmodic expulsion of the semen from the penis, during male orgasm.

Endometrium : the inner lining of the womb.

Embryo : (Greek : 'within, to grow') a term meant to describe that stage of pregnancy from the second to the eighth week.

Epididymis : an oblong body attached to the upper part of each testicle in which the sperms are stored for some period of time.

Erection : a state of enlargement and hardening of the penis due to its spongy erectile tissues being filled with blood under sexual excitement.

Fertile : the condition of a woman being able to conceive, or of the man's spermatozoa being able to fertilise an ovum.

Fertile Phase : See Phase II.

Fertilisation : the union of the ovum and the sperm. This normally takes place in the outer end of the uterine tube.

Foam tablet : a contraceptive containing tartaric acid and sodium bicarbonate. When moistened and placed in the vagina these two compounds produce carbon dioxide to generate a foam which acts as a spermicide.

Foetus : (Latin : 'young one') the name given to a pregnancy from the eigth week until birth.

Gamete : mature male and female reproductive cells viz. sperm and ovum.

Genital Contact : contact of the penis with the vaginal entrance, without penetration occurring. It also includes indirect ways by which sperms (in the semen) can be transferred to the vagina, e.g. through the hand, or if any clothing containing semen touches the vaginal entrance.

Hormone : (Greek : 'to arouse') a chemical substance secreted by a gland directly into the blood stream and having its effect on another part of the body.

Hymen : a thin fold of tissue that partially closes the external opening of the vagina.

Implantation : the stage at which the fertilised ovum embeds itself into the endometrium.

Impotence : the inability to have an erection of the penis.

Infertile : refers to the condition of the woman when she is unable to conceive, or to the inability of the man's sperms to fertilise the ovum.

Intermenstrual bleeding : the slight bleeding ("spotting") that occurs in between the periods, often during the time of ovulation; at times it can be heavy.

Intermenstrual pain : (German : Mittelschmerz) abdominal pain (dull or colicky) occurring in the right or left side of the lower abdomen and close to the time of ovulation.

Interrupted intercourse : withdrawal of the penis (after penetration of the vagina has occurred) and the ejaculation of semen outside it.

Intra-Uterine Device (IUD) : a device made of synthetic material placed in the uterus as a contraceptive measure. It acts by preventing implantation of the fertilised ovum; hence it is an abortifacient.

Labia (lip) : these are the major and the minor lips which are part of the female external genitalia. The former are fatty, hairy folds of skin on each side of the slit of the vulva. The minor lips are thin folds of mucous membrane just behind the former.

Less fertile Mucus : cervical mucus that is thick, opaque, sticky and non-stretchy, white or yellowish in colour; it largely prevents sperms from entering the uterus, through the cervix.

Leucorrhoea: an abnormal white discharge from the vagina.

Luteal Phase : the post-ovulatory part of the cycle which is controlled by progesterone secreted by the yellow body (corpus luteum) of the ovary.

Marital Act : the act of sexual intercourse between husband and wife meant to express the love and unity, of a permanent relationship.

Menarche : the first menses a woman has.

Menopause : the complete cessation of the menstrual and ovarian activity, which signals the end of the reproductive life in a woman.

Menses : the shedding of the lining of the womb.

Menstrual cycle : the cyclic physiological changes in the endometrium, cervix and ovaries.

Menstrual cycle (length of) : the number of days which extend from the first day of the

menstrual period till the last day before the next period begins.

Menstrual period : the number of days the menses lasts.

Mons pubis : a pad of fat which lies in front of the pubic bone and is covered by skin containing hair.

More Fertile Mucus : see Eggwhite Mucus.

Mucus Method : a method of natural family planning by which a woman determines the fertile and infertile phases of the menstrual cycle by looking for the presence or absence of the cervical mucus, specially of the eggwhite type.

Natural Family Planning : a means adopted by the couple of determining the fertile and infertile phases of the cycle, from positive evidence, viz. from natural signs (mucus, temperature, cervix changes, etc.) the knowledge of which is used either to achieve or avoid conception.

Nidation : see Implantation.

Oestrogen : a hormone secreted by the cells lining the ovarian follicles of the ovary that stimulates the development and function of the female reproductive system and the cervical mucus.

Orgasm : the climax of sexual excitement and pleasure in the woman or the man. In the latter it is accompanied by ejaculation.

Os : the latin word for mouth; 'external os' refers to the lower opening of the uterus which can be felt at the upper end of the vagina.

Ovary : the female reproductive gland containing ova.

Ovarian follicle : any of the thousands of tiny spherical sacs embedded in the ovary; each one containing an ovum surrounded by other tiny cells. The latter produce the hormone oestrogen; (named after de Graaf, a Dutch anatomist, hence also known as Graffian follicle).

Ovulation : the release of an ovum from the ovarian follicle.

Ovum : the mature female reproductive cell, or egg (plural : ova).

Pelvis : (Latin : 'basin') the basin - shaped ring of bone supporting the spinal column and resting on the lower extremities.

Penis : the male sexual organ used for coitus; also through which the urine from the bladder is excreted.

Periodic sexual abstinence : a willing avoidance of intercourse by a couple, e.g. during the fertile days of the cycle in order to avoid a conception.

Phase I : the infertile days from the first day of the period till the mucus begins.

Phase II : the fertile or 'baby' days in a cycle.

Phase III : the infertile days in a cycle after ovulation.

Placenta : the round, flat organ through which the foetus derives its nourishment from the mother and excretes its waste products.

Postpartum : after childbirth.

Pre-ejaculatory fluid : a small amount of fluid that involuntarily escapes from the penis during sexual excitement. It is known to contain a high concentration of sperms.

Pre-menopause : the time (months or years) preceding the menopause when irregularities of menstruation and in the length of the cycle together with other bodily disturbances are often seen.

Prepuce : the fold of skin covering the tip of the penis.

Progesterone : a hormone [secreted by the follicle of the ovary called the 'yellow body' (after ovulation occurs) that prepares the endometrium for a possible pregnancy.

Proliferative phase : that part of the menstrual cycle before ovulation during which the lining of the womb thickens under oestrogen stimulation.

Prostate : a gland situated at the base of the bladder. It secretes an alkaline fluid which forms the major portion of the liquid part of the semen.

Puberty : the time during which the reproductive organs begin to function and the secondary sexual characteristics appear.

Rectum (the back passage) : the lowermost part of the large intestine extending to the anus through which the solid waste matter of the body is excreted.

Scrotum : the thin bag of skin that contains the testes.

Secretory phase : that part of the menstrual cycle after ovulation during which the lining of the womb becomes rich with blood mucus, etc. (under progesterone stimulation) that is meant to sustain a conception.

Semen : (Latin: 'seed') the fluid ejaculated by the penis containing the sperms and secretions from the prostate and sperm sacs.

Sexual Act : see Coitus.

Sperm : the mature male sex cell.

Sperm Duct : also called vas deferens. Two in number which convey the sperms from the testicles to the penis.

Sperm Sac : also called seminal vesicle. Two sac-like structures which lie near the top of the prostate and probably serve as a storage-house for sperms.

Sympto-thermal Method : a method of natural family planning by which the pre-ovulatory and post-ovulatory infertile phases are determined by observing the presence or absence of cervical mucus, changes in the cervix, intermenstrual pain and the thermal shift in the basal body temperature. At times, calendar calculations are used to determine the end of "Phase I."

Testicle (or testis) : the male reproductive gland which produce sperms and a hormone that stimulates the male secondary sex characteristics.

Testosterone : a hormone produced by the testes that stimulates the development and function of the man's reproductive system.

Tube : see Ovarian tube.

Tubectomy : a surgical contraceptive procedure in which the uterine tubes are cut and tied. This prevents the sperms from meeting and fertilising the ovum. This is usually an irreversible procedure.

Umbilical cord : the flexible structure that serves to convey the nutrients from the mother to the foetus through the umbilical vein, and the waste products from the foetus to the mother through the umbilical arteries.

Urethra : a narrow membranous canal conveying urine from the bladder to the exterior; in the male it also conveys the semen.

Uterine tubes : two tortuous hollow muscular tubes that conduct the ovum from the ovary to the cavity of the uterus (named after Fallopius, an Italian anatomist, hence also known as Fallopian tubes).

Uterus (or womb) : a hollow muscular organ in the female which is the place of nourishment and growth of the unborn child for the nine months of pregnancy.

Vagina : a hollow muscular passage extending from the cervix to the vulva, meant to receive the penis in the act of sexual intercourse. It also conveys the menstrual blood exteriorly; and through which the infant passes at childbirth, hence it is also called "birth-canal."

Vas deferns : See Sperm duct.

Vasectomy : a surgical contraceptive procedure in which the sperm ducts (vas deferens) are cut and tied. This prevents the sperms from leaving the testes. This is usually an irreversible procedure.

Vulva : the name for the external genital organs in the female which consist of the mons pubis, the major and minor lips, the clitoris, the external urethral opening, the hymen and the vaginal orifice .

Womb : See Uterus.

Yellow Body : the follicle of the ovary from which the ovum was released. It produces the hormone progesterone (and oestrogen to a certain extent) until the end of the cycle; it functions, on an average for 14 days with a range from 12 to 16 days.

Zygote : (Greek : 'yoked together') the name given to the fertilised ovum from the moment of fertilisation until the second week.

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RECOMMENDED READING

GENERAL

My body, My Health : The Concerned Woman's Book of Gynaecology – F. Stewart, G. Stewart & R. Thacher.

Our Bodies, Ourselves - A. Phillips & J. Rakusen

From Woman to Woman - L. Lanson (Penguin).

The Menstrual Cycle - K. Dalton (Pelican).

Childlessness : Its Causes & What to do – E. Philip (U.K.).

PRE–NATAL LIFE (Life Cycle Books, Lewiston N.Y. 14092, U.S.A.)

The First Nine Months of life - G.L. Flanagan.

The Tiniest Human Being - Dr. J. Lejeune.

The Secret Life of the Unborn Child - Dr. T. Verny.

Rites of Life (Scientific Evidence of Life Before Birth) - Dr. L. Shettles & D. Rorvik.

How to Choose the Sex of Your Baby - Dr. L. Shettles & D. Rorvik (Doubleday & Co.).

The First Days of Human Life (colour pamphlet).

Life Before Birth (colour photos) - L. Nilsson.

When You Were Formed in Secret - G. Bergel & Dr. E. Koop.

NATURAL FAMILY PLANNING

Family Planning, The Natural Way- Dr. J. Roetzer.

A Couple's Guide to Fertility - R. Huneger & R. Fuller.

Natural Sex : M. Shivanandan.

The New No Pill, No Risk Birth Control – N. Aguilar

A Manual of Natural Family Planning – Dr. A. Flynn & M. Brooks.

The Art of Natural Family Planning : J. & S. Kippley.

Atlas of the Ovulation Method : J. & E. Billings & M. Catarinich..

Fertility Control in India - Dr. K. Dorairaj.

Breast Feeding & Natural Child Spacing : S. Kippley.

The Womanly Art of Breastfeeding - La Leche League (U.S.A.).

N.F.P. & Family Life Education : (From : Retreat House, Bandra, Bombay – 50).

NATURAL FAMILY PLANNING IN RELATION TO HUMAN SEXUALITY

The Joy of Being a Woman - I. Trobisch.

The Joy of Human Sexuality - N. & J. Ball.

Challenge to Love - M. Shivanandan.

LOVE, MARRIAGE AND SEXUALITY

The Art of Loving - E. Fromm.

The Heart of Loving - E. Kennedy.

How Do I Know I'm in Love? - St. Arnaud Y.

The Meaning of Love - A. Montagu.

Love is a Couple - C. Gallagher S.J.

The Secret of Staying in Love - J. Powell S.J.

Unconditional Love - J. Powell S.J.
How Can a Man & a Woman be Friends ? - M. Joyce.
I Married You - W. Trobisch.
Three to Get Ready - J. Quesnell.
Marriage, A Discovery Together - J. Quesnell.
The Freedom of Sexual Love - J. & L. Bird.
The Human Mystery of Sexuality - M. Oraison.
The Christian Meaning of Human Sexuality - P. Quay S.J.
Nature & Meaning of Chastity - Dr. W. May.
Love & Control - Cardinal L. Suenens.
Touching - Montagu.
Sexuality & Marriage in God's Plan - J. & A. D'Souza.

THE CHURCH'S TEACHING ON MARRIAGE & BIRTH CONTROL.

The Church in the Modern World, Nos. 27–52 - (Vatican II Document).
Humanae Vitae (On Human Life) - Pope Paul VI.
Familiaris Consortio (Christian Family) - Pope John Paul II.
Catholic Sexual Ethics - R. Lawler, J. Boyle & W. May.
Birth Control & the Marriage Covenant - J. Kippley.
Birth Control & Christian Discipleship - J. Kippley.
Sex, Love & Procreation - Dr. W. May.

CONTRACEPTION

From : Human Life Centre, University of Steubenville, Steubenville, Ohio 43952, U.S.A.

The Pill & I.U.D. - Abortive– V. Gager.
Vaginal Contraceptives Available But - A. Hecht.
Unexpected Sequelae of Sterilisation - Dr. H. Dunn.
A Closer look at Sterilisation - N. Lauersen, (Medical World News May 28, 1979, 87).
Complications of Vasectomies - (American Family Physician Vol. 15 No. 3, March 1977, 86–89).
Medical Hazards of the Pill - Dr. H. Ratner (Oak Park, Ill, 60303, U.S.A.).

ABORTION

Abortion, Questions & Answers-Dr. & Mrs. J. Wilke
Let Us be Born - M. & R. Joyce.
Abortion, the Silent Holocaust - J. Powell S.J.
Aborting America - Dr. B. Nathanson.
15 Minutes, the Story of My Abortion - T. Hughson
Abortion's Aftermath - N. Parthun, H. Morris & I. Williams.
Women Exploited - P. Ervin.
A Private Choice - J.T. Noonan Jr.
Who Killed Baby ? - (I.H.S. De Nobili College, Pune 411 014).
The Abortion Holocaust - Dr. W. Brennan.

HUMAN GROWTH/SPIRITUAL LIFE

Why Am I Afraid to Tell You Who I Am ? J. Powell S.J.
Fully Human, Fully Alive - J. Powell S.J.
A Reason to Live, A Reason to Die - J. Powell S.J.
Christian Vision - J. Powell S.J.
He Touched Me - J. Powell S.J.
Personal Counselling - J. Fuster S.J.
Sadhana (Way to God) - A. D'Mello S.J.
Wellsprings : A. D'Mello S.J.
Prayers of Life : M. Quoist.
Hidden Springs to Healing - Sister Usha.

This illustrated book gives basic information on modern methods of natural family planning (NFP) prefaced by a section on the human reproductive system. It is meant for married couples and for those who wish to teach NFP to others. It can also serve as a useful reference book to those giving courses on sex education and marriage, to high school and college students.

From the "**Foreword**" to this book:–

Dr. Menezes in this book has succeeded in depicting the most complex hormonal physiological reactions occurring in the menstrual cycle in such a way that they can be understood by any woman however uneducated she be. The book, however, also contains sufficient accurate and up-to-date information to satisfy the needs of nurses, doctors and medical students. This work will have a much wider circulation not only in India but in all parts of the English-speaking world where NFP is being taught. I do recommend this book to all who are interested or working in this field of family planning and I congratulate Dr. Menezes on the excellence of the production.

Dr. Anna Flynn, M.D.M.R.C.O.G.